COCIR
Advancing Healthcare

TIME for ACTION

MEDICAL IMAGING EQUIPMENT

AGE PROFILE & DENSITY

2019 Edition

COCIR, the European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry

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1. FOREWORD

IMAGING EQUIPMENT:
INSTALLED BASE REMAINS IN NEED OF REPLACEMENT

Despite COCIR raising concerns over the deterioration in the age of the installed base[1] of medical imaging equipment in Europe as long ago as 2014, it is now older than ever before and persists in placing patients at risk.
To continue to draw attention to this worrying trend, COCIR offers the most recent data on the current situation in four modalities of medical imaging, emphasising the extent of the issue.

Approximately one-fifth of medical imaging equipment is now more than ten years old. This makes it challenging to keep it properly maintained and repaired. More worryingly, it renders them suboptimal for conducting many modern procedures. Clearly, this should not be the case; the consistent and persistent deterioration in the age of the equipment base should not be allowed to continue.

Patient safety is a shared responsibility, with industry already playing an important role: advances in technology have allowed manufacturers to lower the required radiation doses, reducing patient exposure and therefore the risk.
COCIR members remain committed to continuously enhancing both quality and safety through constant research and innovation. This ensures the best support for healthcare providers and ultimately benefits citizens in Europe and beyond.
Policymakers and healthcare providers now need to play their part, replacing obsolete equipment to reverse this negative trend and bringing the benefits of the latest advances in imaging technology to all EU citizens. Cost should not be a barrier, embracing innovative financing models will make renewing the equipment base affordable.

As the premier trade association for medical imaging, COCIR will continue to collect data on the age of the installed base and report on the trends as it has done since 2003. The benefits to patients and clinicians of renewing the medical imaging technology base are clear and irrefutable.

Considering the usefulness of data collected on age of medical imaging equipment we are pleased to let you know we decided to monitor as well the age profile for radiotherapy equipment. We are confident we will be able to share those data for the 1st time this year.

Nicole DENJOY
COCIR Secretary General

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[1] Installed base: number of units of medical imaging machines installed in each Country and their density, calculated as units/million inhabitants

2. INTRODUCTION

COCIR has been collating statistics and proactively assisting European Member States to monitor their installed base of medical imaging equipment since the 1990s. COCIR uses these parameters to monitor any changes in the age profile of the installed base in these countries. Since the 2016 edition, we have broadened the scope of the analysis, including data from 33 new locations outside of Europe.

The issue of 'technological obsolescence' can often go unnoticed; it is influenced by an imbalance between the pace of incremental innovation and the rate of equipment replacement.

An appropriate mix in the age profile of installed equipment is essential for efficient and productive healthcare systems. This mix forms the basis for COCIR's 'Golden Rules', drafted in 2003. These rules support evaluation of the medical equipment installed base and aid procurement processes. They take account of the need to balance the benefits of innovation against the obligation to derive the maximum value from capital investment.

THE COCIR GOLDEN RULES

1. At least 60% of the installed equipment base should be less than five years old.
Medical technology life-cycle averages suggest equipment up to five years old adequately reflects the current state of technology with opportunities for economically-viable upgrade measures.

2. No more than 30% of the installed equipment base should be between six to ten years old.
Medical technology that is between six to ten years old remains fit for purpose. However, systems replacement strategies should be developed to benefit from the efficiency gains afforded by the latest technologies.

3. No more than 10% of the age profile should be more than ten years old.
Medical technology more than ten years old is outdated and increasingly challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting certain procedures; replacement is essential.

The **European Society of Radiology (ESR)** has recognised the clinical importance of planning for timely equipment replacement. In 2014, it published a position paper[2] on renewal, which stated that; **"It is known that equipment that is up to five years old reflects the current state of technology and offers opportunities for economically reasonable upgrade measures.**
Equipment which is between six and ten years old is still fit for use if properly maintained, but already requires replacement strategies to be developed.
Equipment older than ten years is no longer state-of-the art and replacement is essential."

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2 "Renewal of radiological equipment" http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4195838/

3. EXECUTIVE SUMMARY

Austerity measures imposed on healthcare systems mean that the installed base of medical imaging equipment in Europe is older than ever before. The continuing use of this equipment exposes patients to unnecessary risk.

In a position paper[3] in 2016, the ESR stated:
"The crisis has led to a reduction in the turnover of imaging equipment resulting in a higher than usual level of aging of technological equipment, at a time when technological developments are still increasing. The plan for the purchase of new technologies will slow down, with a level of obsolescence constantly increasing.
The quality of care will be affected with failure to invest in lower dose equipment to control population medical radiation exposure.
Impacts on quality are because, especially in radiology, new equipment offers higher imaging quality and reduced radiation exposure, owing to the improvement of technologies using X-rays or to the substitution of non-ionising technologies (e.g. MR imaging)."

The COCIR data clearly show that during the last ten years, the number of countries that meet COCIR's 'Golden Rules' has not significantly improved. Indeed, the situation for CT and MRI has continued to deteriorate.

An ageing population means that health systems face major economic and societal challenges, which can be addressed through increasingly rapid incremental innovation. However, there is a worrying lag in implementation.
If we want societal benefits for all patients equally, then all stakeholders must act urgently to address this delay. This has already been highlighted in both our 2014 and 2016 reports; it is clear that action is now long overdue.

Earlier this year we were able to share the infographics identifying the worrying trends for four modalities. For details, refer to Annex 1. Hereafter, how the trends looks like for MRI:

	DOES NOT AT ALL MEET GOLDEN RULES
	CLOSE BUT NOT MATCHING GOLDEN RULES
	EQUAL OR BETTER THAN GOLDEN RULES
	DATA NOT AVAILABLE

2008   2015   2018

Alarming results are as follows:

For **MRI**, in 10 years the number of countries that do not meet the COCIR Golden Rules has more than doubled

For **CT**, in 10 years the number of countries that do not meet the COCIR Golden Rules is over 3 times more

For **X-Ray angio/Interventional** and for **MI-PET**, in 10 years the number of countries that do not meet the COCIR Golden Rules has not shown any significant improvement

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3 "The consequences of the economic crisis in radiology" https://link.springer.com/article/10.1007/s13244-015-0434-9

4. COCIR RECOMMENDATIONS

1. **Replace obsolescent equipment that cannot be upgraded:**
COCIR calls upon national and regional governments and EU policymakers to support the replacement of technologically obsolescent equipment that cannot be upgraded, using cohesion policy[4] funding to ensure comprehensive, coherent and sustained investment. This will transform the delivery of care for all.

2. **Adopt and diffuse Managed Services:**
COCIR calls upon Member States and regions to encourage hospitals and healthcare providers to use the European Fund for Strategic Investments to adopt and diffuse long-term business and financial innovative models, such as Public Private Partnerships and Managed Services. Both guarantee sustainable access to the latest healthcare technology and equipment. The Managed Services model also brings additional value, offering analytical insights and procedural valuations that can increase efficiencies and improve clinical outcomes [5].

3. **Adopt a patient-centric approach to dose reduction and optimisation**
COCIR calls upon healthcare providers to adopt a more patient-centric approach to dose reduction and dose optimisation when replacing ageing equipment. This will enhance patient safety. The ESR[6] also recommends using "***robust equipment replacement programmes that take into consideration optimisation of radiation dose and improved efficiencies***".

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4 The European Regional Development (ERDF) and Cohesion Fund remain the most powerful investment tools of the European Union and constitute an important route to funding better care and health infrastructure.
Read more: https://ec.europa.eu/regional_policy/en/funding/erdf/ https://ec.europa.eu/regional_policy/en/funding/cohesion-fund/
5 COCIR "Managed Services – Innovative Business and Financial Models. Key Performance Indicators targeting EU healthcare sustainability goals" https://www.cocir.org/media-centre/publications/article/managed-services-innovative-business-and-financial-models-key-performance-indicators-targeting-eu-healthcare-sustainability-goals.html
6 "The consequences of the economic crisis in radiology" https://link.springer.com/article/10.1007/s13244-015-0434-9

5. AT A GLANCE:
KEY INSTALLED BASE FINDINGS

1. Approximately one-fifth of the European installed base, for all four product modalities measured, is now more than ten years old.

2. In the last ten years, the number of countries meeting COCIR's 'Golden Rules' has not significantly improved; indeed, the situation for CT and MRI has further deteriorated.

3. There have been slight improvements in equipment density in both Eastern and Western Europe.

4. However, equipment density in Eastern Europe still continues to lag far behind Western Europe's.

		INSTALLED BASE (IB): EU + Switzerland & Norway					AGE VS 'GOLDEN RULES'		
		2008	2011	2013	2015	2018	Mkt% by age 2015	Mkt% by age 2018	Golden Rules
X-Ray Angiography/Interventional	Installed Base (IB) 1-5 years - units	2650	3811	3084	2361	3766	49%	44%	60%
X-Ray Angiography/Interventional	IB 6-10 years - units	1571	2163	2579	1641	2982	34%	35%	30%
X-Ray Angiography/Interventional	IB >10 years - units	1237	1780	1534	769	1765	16%	21%	10%
X-Ray Angiography/Interventional Total		5458	7754	7197	4771	8513			
Computed Tomography	IB 1-5 years - units	6189	6569	5898	5669	5955	48%	45%	60%
Computed Tomography	IB 6-10 years - units	3155	3627	4528	4574	4523	39%	34%	30%
Computed Tomography	IB >10 years - units	933	1061	1477	1548	2748	13%	21%	10%
Computed Tomography Total		10277	11257	11903	11791	13226			
Magnetic Resonance Imaging	IB 1-5 years - units	3568	4287	4002	4081	5062	47%	51%	60%
Magnetic Resonance Imaging	IB 6-10 years - units	2082	2546	2898	2947	2823	34%	28%	30%
Magnetic Resonance Imaging	IB >10 years - units	808	1178	1653	1587	2048	18%	21%	10%
Magnetic Resonance Imaging Total		6458	8011	8553	8615	9933			
Molecular Imaging PET	IB 1-5 years - units	430	532	448	378	565	49%	47%	60%
Molecular Imaging PET	IB 6-10 years - units	118	294	325	332	417	43%	35%	30%
Molecular Imaging PET	IB >10 years - units	40	110	91	63	219	8%	18%	10%
Molecular Imaging PET Total		588	936	864	773	1201			

Table A *Age Evolution[7] of Installed Base vs. COCIR Golden Rules*

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7 Figures highlighted in red show deterioration in 2018 versus 2015

6. WHY INNOVATION MATTERS

Innovative medical technologies have always been a major driver for improving healthcare quality. However, such technologies are now capable of much more, driving integrated patient–centric care pathways that can improve healthcare efficiency and productivity.

Early and definitive diagnosis will combine information from medical imaging, digital pathology, genomics and other clinical and patient data to deliver 'right first-time' diagnoses inside and outside the hospital setting. This will, amongst others, be based on the following advances:

IMAGE GUIDED THERAPY will industrialise care delivery processes to improve quality assurance, clinical outcomes and cost control.

INTEGRATED SOLUTIONS that combine real-time imaging with smart devices and intra-procedural navigation will further accelerate the transformation from open surgical procedures to minimally and non-invasive approaches.[8]

ARTIFICIAL INTELLIGENCE / DEEP LEARNING will support and enhance diagnosis.

Investing in innovative products and solutions can improve medical consistency, patient safety, productivity and connectivity.

Each year, engineering and IT advances coupled with a greater understanding of disease at a molecular level, delivers innovation in medical technology. For the installed base of medical imaging equipment, many incremental advances become available that can improve existing processes of medical imaging equipment while extending the range of usefulness. These developments often offer clinicians unprecedented visual and functional information about their patients along with faster, more intelligent diagnostic imaging systems that support decision-making, reduce complexity and increase productivity.

As these advances are frequently incremental, industry offers upgrades that help extend the life of equipment over a defined period. However, as equipment ages, increasing numbers of technical incompatibilities arise such as in equipment control and the component redesign. This can render continuing updates uneconomical, perhaps impossible.

In the case of **Computed Tomography (CT)**, COCIR believes that the installed base should be renewed more rapidly to improve patient safety. Specifically, COCIR has identified significant triggers for renewal in the technological, medical and regulatory areas. These include **CT Dose modulation** and **CT Reiterative reconstruction** and **Artificial Intelligence** algorithm technologies, which dramatically reduce the required X-ray dose. For example, reductions of >50% in paediatric imaging without a loss of diagnostic quality have been published.[9] These software applications, often available as upgrades, also improve hospital efficiency, clinical effectiveness and reduce costs.

Dose modulation technologies automatically calculate the optimum tube current for each anatomical area and the real-time current control for the X-ray tube. This ensures patients receive the minimum dose necessary; the ALARA principle (As Low As is Reasonably Achievable).

Reiterative reconstruction and Artificial Intelligence algorithm technologies reproduce higher dose protocol scans from raw low-dose scan data. This reduces the absorbed dose and provides higher-quality images for the same exposure.

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8 COCIR Mission Proposal for FP9. "Live longer, Feel better: a European mission for the digitisation of healthcare" https://www.cocir.org/media-centre/position-papers/article/cocir-mission-proposal-for-fp9.html
9 C. Saidlear et al, ECR 2015 / C-1888, 2015 http://posterng.netkey.at/esr/viewing/index.php?module=viewing_poster&pi=128238

COCIR believes that the patient benefits offered by these advances are clear and compelling. At minimum, this should provide the momentum for upgrades to the current CT installed base and encourage investment in new and replacement low-dose CT technology throughout Europe.

MANAGED SERVICES, INNOVATIVE BUSINESS AND FINANCIAL MODELS

Since 2010, COCIR has been cooperating with the European Commission on the concept of 'Hospital of Today/Tomorrow'. This initiative reflects on effective ways of benefitting from new financial and business tools and on identifying cost-efficient solutions for helping improve the financially sustainability of the healthcare sector.

Many Member States view innovative medical technologies as a potential cost, rather than an opportunity to improve quality, efficacy, patient safety and productivity. As a consequence, most purchase decisions are currently price-driven and fail to take account of any incremental value the technology or method may provide.

As early as 2015, the Commission Expert Panel on Effective Ways of Investing in Health[10] endorsed the new business models approach in its report on '**Disruptive Innovation: Considerations for health and health care in Europe**'.[11] This highlighted the value of innovative financial models, such as Managed Services, in implementing and disseminating innovation. The report also suggested that these models should be considered 'disruptive innovations' in their own right.

New business models, such as Managed Services, shift funding from capital expenditure to the more predictable operational expenditure, while including an element of risk-sharing. They provide the financial flexibility to secure long-term access to these innovative technologies and/or broader healthcare solutions, thus allowing them to reach more patients.

In its 2016 report[12] '**Managed Services – Innovative Business and Financial Models. Key Performance Indicators targeting EU healthcare sustainability goals'**, COCIR demonstrated how we need to think more broadly about how we finance healthcare and how we perceive innovation. The report identifies the most important Key Performance Indicators (KPIs) for providing evidence of the value of Managed Services.

Given the appropriate incentives and investment, more hospitals and patients in Europe will benefit from the greater efficiencies and improved outcomes afforded by ongoing advances in medical technology. However, adapting funding mechanisms will be also be fundamentally important.

The latest COCIR data show that while there has been a slight improvement in equipment density in both Eastern and Western Europe, Eastern Europe continues to lag far behind Western Europe.
Such disparities highlight the significant infrastructure challenges in Eastern Europe.
COCIR recommends that Member States and regions should encourage hospitals and healthcare providers to use the European Fund for Strategic Investments (EFSI) within the Investment Plan for Europe[13] - the 'Juncker Plan' - to adopt and diffuse Managed Services as an element of the solutions for assuring citizens' access to quality healthcare services.

10 http://ec.europa.eu/health/expert_panel/index_en.htm
11 http://ec.europa.eu/health/expert_panel/consultations/disruptive_innovation_en.htm
12 https://www.cocir.org/media-centre/publications/article/managed-services-innovative-business-and-financial-models-key-performance-indicators-targeting-eu-healthcare-sustainability-goals.html
13 https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan-europe-juncker-plan_en

7. 2019 AGE PROFILE:
DETAILED ANALYSIS OF RESULTS

Comparing the data measured at END 2018 to the historical data and to the COCIR Golden Rules criteria

A. COMPUTED TOMOGRAPHY (CT)

COCIR companies participating in Age Profile reporting; GE, Hitachi, Philips, Siemens Healthineers, Canon Medical Systems.

EUROPE:

COCIR has monitored the Age Profile of CT equipment since 1998. It began with Western Europe, subsequently expanding its coverage to encompass Eastern Europe.

The most alarming finding is that the number of countries with more than 10% of CT machines older than ten years has more than **trebled in the last 10 years**.

WESTERN EUROPE:

> Age Profile continues to decline

> Equipment density has increased slightly

- Overall, the observed CT scanner age profile continues to deteriorate against the Golden Rules criteria. The percentage of systems over five years old has increased from 40% in 2008 to 55% in 2018.

- Despite earlier warnings, Western Europe regularly and significantly infringes COCIR's Golden Rule that no more than 10% of the installed base should be more than ten years old.

- Only France meets all the Golden Rules criteria.

- The CT scanner age profiles fall appreciably short of the criteria, notably in Spain, Ireland, Belgium, Greece and Italy.

- In these countries, the "*six years and older*" combined proportion of the age profile is over 60% of the installed equipment. This deviates sharply from the Golden Rule of not exceeding 40%.

- Average CT density *(the number of systems in use per million inhabitants)* in Western Europe has increased slightly, from 24.1 in 2015 to 26.3 in 2018. Portugal (37.8), Greece (37), Austria (36.7), Italy and Germany (both 34.1) and Denmark (31.2) had densities higher than 30. Meanwhile, the Netherlands and UK have densities lower than 20.

CENTRAL AND EASTERN EUROPE:

> Slight improvement in equipment density

- The overall CT equipment age profile still falls short of the Golden Rules.

- Only Bulgaria meets all the criteria.

- The age profiles in several countries exceed the "*six years and older*" Golden Rule, with Albania, Baltics, Bosnia, Macedonia, Serbia and the Ukraine all over 70%.

- The average CT density in Central and Eastern Europe increased slightly from 13 in 2015 to 15.4 in 2018. However, this remains significantly lower than in Western European. Only the Baltics (31.9) had a density greater than 30. The lowest densities were found in the Ukraine (6.3) and Hungary (13).

RUSSIAN FEDERATION:

In 2015, the "*six years and older*" portion represented 40% of installed equipment. It has subsequently deteriorated to 67%. CT density is still higher than the Eastern European average at 17.3.

TURKEY:

The CT age profile has slightly improved since the 2015 surveys, with CT systems now more than six years old dropping to 56%. Equipment density has decreased from 14 to 12.4.

REST OF THE WORLD[14]:

Brazil fails to achieve the Golden Rules criteria. The proportion falling within the installed base has deteriorated, with the machines six years and older increasing from 56% in 2015 to 61% in 2018.

Data for **Greater China** and the **Indian subcontinent** also show progressive overall ageing of equipment.

Within the Middle East region, **Qatar** and **Iraq** fall just short of COCIR Golden Rules criteria. All have shown a marked improvement since 2013.

In the Commonwealth of Independent States (CIS) countries, only **Turkmenistan** meets the Golden Rules.

Equipment density ranges from 3 in India to 9 in the Middle East (the average is mainly influenced by the 18.7 in Saudi Arabia), 12.1 in Greater China, 13.2 in CIS (17.3 in Russia) and 15.2 in Brazil.

B. MAGNETIC RESONANCE IMAGING (MRI)

COCIR companies participating in Age Profile reporting; GE, Hitachi, Philips, Siemens Healthineers, Canon Medical Systems.

EUROPE:

COCIR has been monitored the MRI Age Profile since 1998. It began with Western Europe, subsequently expanding its coverage to Eastern Europe.

The most alarming finding is that the number of countries with more than 10% of CT machines more than ten years old has more than **doubled over the last 10 years**.

WESTERN EUROPE:

> **Age Profile slightly improved but still not meeting the COCIR Golden Rules**

> **Improvement in equipment density**

• Overall, the MRI equipment age profile does not meet the COCIR Golden Rules, and the situation has only slightly improved since previous studies. Some 49% of all installed MRI systems still exceed five years of age (54% in 2015). Over one in five MRI systems remain more than ten years old.

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14 Equipment density data does not include local vendors. Estimated COCIR coverage for CT is 96% in Russia; 90% in Greater China and 94 % in the Indian Subcontinent

- Only Sweden, Belgium, France and Switzerland meet all Golden Rules criteria.

- in several other countries, such as Spain, Ireland and Greece, over 60% of the installed equipment still fails to meet the "six years and older" combined Golden Rules.

- The average MRI density in Western Europe was 20.9, an increase from 18.5 in 2015.

- Germany (33.1), Austria (27.6), Denmark (26.9), Finland (24.0) and Greece (22.2) all achieved densities greater than 20.

CENTRAL AND EASTERN EUROPE:

> No improvement in Age Profile

> Marginal improvement in equipment density

- Only two countries, Bulgaria and Romania, meet all Golden Rules criteria

- Hungary, Poland and Slovakia fall just short.

- The average MRI density in Central and Eastern Europe has improved from 6.5 in 2015 to 7.4 in 2018. However, it remains significantly below the all-European average of 15.1 systems. The lowest densities were in the Ukraine (1.6), Albania (3.9), Bulgaria (4.0), Bosnia and Macedonia (4.2).

RUSSIAN FEDERATION:

The MRI equipment age profile in Russia, which had met the Golden Rules in both 2013 and 2015, has **deteriorated.** Some **55%** of machines are now more than six years old.

TURKEY:

The equipment age profile has not improved since 2015. The number of "six years and older" systems is now **55%**.

REST OF THE WORLD[15]:

Brazil fails to meet the Golden Rules and the proportion within the installed base has deteriorated. The percentage of machines older than six years has increased from 46% in 2015 to **52%** in 2018.

Greater China has been meeting the Golden Rules since 2013.

The **Indian subcontinent no longer meets the Golden Rules.** The percentage of machines older than six years is now **46%**.

Within the Middle East region, there has been a marked deterioration since 2015. Only **Oman** now meet the COCIR Golden Rules, while Kuwait and Iraq fall just short.

In the CIS countries, only **Turkmenistan** meets the Golden Rules, with **Uzbekistan** just falling short.

Equipment density ranges from **1.4** in the Indian subcontinent to an average of **5.8** in the Middle East. This is mainly driven by Kuwait (29.5), the UAE and the Lebanon (both 18.2). Greater China area achieves 4.9, CIS 5.9 (an average driven by Russia at 7.6), Brazil 15.5 and Turkey 11.9, both closer to Western Europe, at 20.9.

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15 Equipment density data does not include local vendors. Estimated COCIR coverage for MRI is 96% in Russia; 87% in Greater China and 96 % in the Indian Subcontinent

C. X-RAY ANGIOGRAPHY / INTERVENTIONAL

COCIR companies participating in Age Profile reporting: GE, Philips, Siemens Healthineers, Canon Medical Systems.

EUROPE:

WESTERN EUROPE:

> Deterioration in Age Profile

> Increase in equipment density

- The X-ray Angiography/Interventional equipment age profile falls a long way short of the Golden Rules criteria, with many countries deteriorating from their 2013 and 2015 levels.

- None of the countries in Western Europe meets the Golden Rules.

- Finland is the only country in Western Europe that come close to meeting the Golden Rules.

- A number of countries, including Spain (63%), Denmark (68%) and Greece (66%), fail to meet the combined Golden Rules "six years and older" 60% criteria.

- The average X-ray Angiography/Interventional density (number of systems in use per million inhabitants) in Western Europe improved from 13.4 in 2015 to 17.7. Germany (29.2) Sweden (25.5), Belgium (23.2), Austria and Netherlands (both 22.6) all had densities of 20 or higher. Portugal (7.8) and Greece (9.8) had densities below 10.

CENTRAL AND EASTERN EUROPE:

> Marked improvement of Age Profile

> Slight increase in equipment density

- Overall, the X-ray Angiography/Interventional age profile shows a marked deterioration, with only Bulgaria and Romania meeting the Golden Rules criteria.

- Croatia and Macedonia registered a decline, falling short of the Golden Rules criteria.

- The average X-ray Angiography/Interventional density in Central and Eastern Europe was 7.1, a slight increase over the 5.8 of 2015 but still well below the all-Europe average of 14.7. Ukraine (1.3), Macedonia (3.3) and Bosnia (3.9) had the lowest densities.

RUSSIAN FEDERATION:

The X-ray Angiography/Interventional age profile has **deteriorated** sharply, with the percentage of systems "six years and older" increasing from 40% to 62%.

TURKEY:

The X-ray Angiography/Interventional age profile still falls **well short** of the Golden Rules criteria. The "six years and older" segment of installed equipment is now 56%.

REST OF THE WORLD[16]:

Brazil fails to meet the Golden Rules criteria. The combined percentage of machines "six years and older" increased from 49% in 2015 to 62% in 2018.

Greater China has met the Golden Rules criteria since 2013, with 62% of its X-ray angiography systems now five years old or less.

The **Indian subcontinent** had shown a marked improvement and now meets the Golden Rules, with 64% of its X-ray angiography systems now five years old or less.

In the Middle East region, **Kuwait and Oman both** meet the Golden Rules criteria, while Qatar and Saudi Arabia fall just short.

In the CIS countries, **Kazakhstan** and **Uzbekistan** meet the Golden Rules, while **Azerbaijan** and **Kazakhstan** fall just short.

Equipment density ranges from 1.4 in the Indian subcontinent to 3.7 in the Greater China area, 4.1 in CIS (the average driven by 4.9 in Russia). The Middle East average is 3.8, driven by Lebanon (10.8), Saudi Arabia (7.5) and Jordan (7); Brazil has a density of 4.5; and **Turkey 7.6**, putting it above the average density in Central and Eastern Europe of 7.1.

MOLECULAR IMAGING-PET (MI-PET)

EUROPE:

COCIR companies participating in Age Profile reporting: GE, Philips, Siemens Healthineers

WESTERN EUROPE:

> Slight improvement in Age Profile

> Increase in equipment density

- Overall, the Molecular Imaging-PET (MI-PET) equipment age profile has not improved since 2015.

- France has met the Golden Rules criteria since 2013.

- Norway and Sweden have substantially renewed their installed base with currently 69% and 78% respectively aged five years or less.

- Portugal also shows a moderate amount of renewal, with 65% currently aged five years or less.

- The age profiles of a number of countries, notably Ireland (87%) Spain (69%) Germany and Italy (66%) now deviate markedly from the "six years and older" combined Golden Rules.

- The average MI-PET density (*number of systems in use per million inhabitants*) for Western Europe is 2.6, an increase from 1.7 in 2015

- Denmark (7.5) and Switzerland (4.7) have the highest MI-PET densities.

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16 Equipment density data does not include local vendors. Estimated COCIR coverage for X-ray Angiography/Interventional is 96% in Russia; 95% in Greater China; 98% in the Indian Subcontinent

CENTRAL AND EASTERN EUROPE:

> Deterioration of Age Profile

> Slight improvement in equipment density

- The MI-PET equipment age profile has deteriorated further since 2015 and still fails to meet the Golden Rules criteria.
- The only Eastern European countries that continue to meet the criteria are Bulgaria, Czech Republic and Macedonia.
- The average MI-PET density for Central and Eastern Europe is 0.7, a slight improvement over 0.4 in 2015. However, it is still less than a third of that of the Western Europe average of 2.6.

RUSSIAN FEDERATION:

The MI-PET equipment age profile has deteriorated, now falling short of the Golden Rules threshold, with 53% of systems aged "six years and older". Average density is **0.6**, thus slightly below that of Central and Eastern Europe, at 0.7.

TURKEY:

Turkey does not meet the Golden Rules criteria and it is deteriorating, with systems aged five years or less decreasing from 54% in 2015 to 44% in 2018. The average density is **2**.

REST OF THE WORLD[17]:

Brazil no longer meet Golden Rules criteria. Systems aged five years or less have decreased from 74% in 2015 to 44% in 2018.

The Age of equipment in Greater China is progressively deteriorating .

The Indian subcontinent has improved and now meets the Golden Rules.

In the Middle East region, **Bahrain, The Emirates (UAE) and Qatar** now fall short of the Golden Rules criteria, while **Kuwait, Oman, Iraq and Lebanon** still meet them.

In the CIS countries, **Azerbaijan, Belarus and Uzbekistan** all meet the Golden Rules criteria.

Equipment density in the Indian subcontinent is 0.2, 0.4 in Greater China and 0.5 in the Middle East (the average is driven by 0.8 in Saudi Arabia) and 0.7 in Brazil.

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17 Equipment density data does not include local vendors. **Estimated** COCIR coverage for MI-PET is 100% in Russia; 76% in Greater China; 97% in the Indian Subcontinent

ANNEX 1:
DETAILED RESULTS

INFOGRAPHICS

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY
COMPUTED TOMOGRAPHY (CT)

21%

Over one fifth of the CT installed base in Europe is now **MORE THAN 10 YEARS OLD**.

2.900

Around 2900 CT units in Europe are obsolete, challenging to maintain and repair, inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these CT units are in: **ITALY**, **GERMANY**, **SPAIN**, **POLAND**, **UK**, **GREECE**, **PORTUGAL** and **FRANCE**.

- DOES NOT AT ALL MEET GOLDEN RULES
- CLOSE BUT NOT MATCHING GOLDEN RULES
- EQUAL OR BETTER THAN GOLDEN RULES
- DATA NOT AVAILABLE

2008　　**2015**　　**2018**

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules is over **3 TIMES** more.

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY
MAGNETIC RESONANCE IMAGING (MRI)

21%

Over one fifth of the MRI installed base in Europe is now **MORE THAN 10 YEARS OLD**.

2.100

Around 2100 MRI units in Europe are now more than 10 years old. Medical technology more than ten years old is outdated and challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these MRI units are in: **GERMANY**, **SPAIN**, **ITALY**, **UK** and **GREECE**.

2008	2015	2018

- 🟥 DOES NOT AT ALL MEET GOLDEN RULES
- 🟧 CLOSE BUT NOT MATCHING GOLDEN RULES
- 🟩 EQUAL OR BETTER THAN GOLDEN RULES
- ⬛ DATA NOT AVAILABLE

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules has more than **DOUBLED**.

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY
IS UNDERMINING PATIENT SAFETY
X-RAY ANGIOGRAPHY / INTERVENTIONAL

21%

Over one fifth of the X-Ray Angio installed base in Europe is now **MORE THAN 10 YEARS OLD**.

1.800

Around 1800 X-Ray Angio units in Europe are now more than 10 years old. Medical technology more than ten years old is outdated and challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these X-Ray Angio units are in: **GERMANY, ITALY, UK, SPAIN, FRANCE, NETHERLANDS** and **POLAND**.

2008   **2015**   **2018**

- DOES NOT AT ALL MEET GOLDEN RULES
- CLOSE BUT NOT MATCHING GOLDEN RULES
- EQUAL OR BETTER THAN GOLDEN RULES
- DATA NOT AVAILABLE

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules has not shown any significant improvement.

OBSOLESCENT MEDICAL IMAGING TECHNOLOGY IS UNDERMINING PATIENT SAFETY
MOLECULAR IMAGING
POSITRON EMISSION TOMOGRAPHY (MI-PET)

18%

Nearly one fifth of the MI-PET installed base in Europe is now **MORE THAN 10 YEARS OLD**.

220

Around 220 MI-PET units in Europe are now more than 10 years old. Medical technology more than ten years old is outdated and challenging to maintain and repair. Compared with current medical guidelines and best practices, it can be considered obsolete or inadequate for conducting some procedures; **REPLACEMENT** is **ESSENTIAL**.

The majority of these MI-PET units are in: **ITALY, SPAIN, GERMANY, UK** and **FRANCE**.

2008   **2015**   **2018**

🟥 DOES NOT AT ALL MEET GOLDEN RULES

🟧 CLOSE BUT NOT MATCHING GOLDEN RULES

🟩 EQUAL OR BETTER THAN GOLDEN RULES

⬛ DATA NOT AVAILABLE

In **10 YEARS**, the number of countries that do not meet the COCIR Golden Rules has not shown any significant improvement.

COMPUTED TOMOGRAPHY (CT)

DOES NOT AT ALL MEET GOLDEN RULES
CLOSE BUT NOT MATCHING GOLDEN RULES
EQUAL OR BETTER THAN GOLDEN RULES

TABLE 1   COMPLIANCE WITH GOLDEN RULES (CT)

	RATING	END 2018 AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	END 2015 AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	END 2013 AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	END 2011 AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	END 2008 AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS
Albania		7%	64%	29%		61%	29%	10%		65%	22%	12%								
BALTICS		**26%**	**35%**	**38%**		**64%**	**23%**	**13%**		**43%**	**47%**	**9%**		**68%**	**24%**	**8%**		**70%**	**26%**	**4%**
Bosnia		28%	49%	23%		51%	36%	13%		46%	40%	14%								
Bulgaria		75%	22%	3%		67%	28%	5%		76%	16%	8%		33%	52%	15%		52%	24%	24%
Croatia		54%	28%	18%		40%	47%	14%		34%	43%	24%								
Czech Republic		38%	39%	24%		35%	49%	16%		46%	38%	16%		66%	22%	12%		60%	30%	9%
Hungary		54%	29%	17%		58%	19%	22%		41%	42%	17%		43%	52%	5%		52%	43%	6%
Macedonia		26%	48%	26%		72%	20%	8%		61%	21%	18%								
Poland		39%	42%	19%		52%	34%	14%		61%	33%	6%		68%	27%	5%		69%	22%	9%
Romania		58%	33%	10%		61%	34%	5%		66%	27%	6%		79%	17%	4%		70%	20%	11%
Serbia		28%	37%	36%		46%	39%	14%		36%	44%	20%								
Slovakia		49%	28%	24%		42%	38%	20%		48%	40%	11%		62%	28%	10%		55%	27%	18%
Slovenia		42%	30%	28%		22%	51%	27%		26%	51%	23%		52%	24%	24%		52%	22%	26%
Ukraine		29%	47%	24%		54%	36%	10%		51%	36%	14%		66%	26%	8%		54%	13%	33%
EASTERN EUROPE		**41%**	**38%**	**21%**		**52%**	**35%**	**13%**		**54%**	**35%**	**11%**		**66%**	**26%**	**8%**		**63%**	**24%**	**13%**
Portugal		42%	32%	26%		38%	43%	19%		45%	43%	12%		52%	38%	10%		64%	29%	7%
Spain		33%	32%	35%		35%	46%	19%		35%	41%	24%		50%	33%	17%		54%	32%	15%
IBERIA		**35%**	**32%**	**33%**		**36%**	**45%**	**19%**		**38%**	**42%**	**21%**		**50%**	**34%**	**16%**		**56%**	**31%**	**13%**
Denmark		48%	34%	18%		61%	35%	3%		63%	31%	6%		67%	27%	6%		63%	31%	6%
Finland		45%	32%	24%		36%	48%	17%		45%	44%	11%		63%	28%	9%				
Norway		50%	29%	21%		53%	37%	10%		42%	46%	12%		51%	43%	6%		63%	31%	7%
Sweden		59%	36%	4%		55%	38%	7%		61%	31%	8%		63%	34%	4%				
SCANDINAVIA		**52%**	**33%**	**15%**		**54%**	**38%**	**8%**		**55%**	**37%**	**9%**		**61%**	**33%**	**6%**		**60%**	**35%**	**5%**
Ireland		36%	30%	34%		34%	51%	15%		34%	55%	11%		57%	37%	5%		72%	24%	4%
UK		49%	37%	14%		54%	38%	8%		44%	46%	10%		62%	36%	1%		60%	36%	4%
UK & IRELAND		**47%**	**36%**	**16%**		**52%**	**40%**	**9%**		**43%**	**47%**	**10%**		**62%**	**37%**	**2%**		**61%**	**35%**	**4%**
Austria		48%	35%	17%		43%	44%	12%		39%	45%	16%		52%	36%	12%		59%	32%	9%
Belgium		38%	44%	18%		55%	37%	8%		49%	43%	8%		25%	72%	3%		70%	27%	3%
France		67%	26%	6%		70%	26%	4%		71%	26%	4%		71%	27%	3%		73%	25%	2%
Germany		45%	37%	18%		45%	42%	13%		49%	39%	12%		60%	31%	9%		58%	31%	12%
Greece		37%	30%	33%		32%	51%	17%		38%	43%	19%		62%	28%	10%		62%	30%	8%
Italy		34%	34%	31%		36%	43%	21%		43%	40%	18%		49%	35%	16%		53%	35%	12%
Netherlands		47%	37%	16%		47%	35%	18%		50%	39%	11%		50%	40%	10%		62%	35%	3%
Switzerland		54%	35%	11%		57%	36%	7%		52%	39%	9%		59%	38%	4%		71%	27%	2%
WESTERN EUROPE		**45%**	**34%**	**21%**		**47%**	**40%**	**13%**		**49%**	**39%**	**13%**		**56%**	**35%**	**9%**		**60%**	**31%**	**9%**
EUROPE		**44%**	**35%**	**21%**		**48%**	**39%**	**13%**		**50%**	**38%**	**13%**		**57%**	**34%**	**9%**		**60%**	**31%**	**9%**
CYPRUS		**38%**	**16%**	**47%**		**50%**	**31%**	**19%**		**29%**	**43%**	**29%**		**47%**	**47%**	**5%**		**67%**		
RUSSIA		**33%**	**50%**	**17%**		**60%**	**28%**	**13%**		**68%**	**22%**	**10%**		**66%**	**19%**	**14%**		**58%**	**23%**	**19%**
TURKEY		**44%**	**34%**	**22%**		**40%**	**47%**	**13%**		**48%**	**42%**	**10%**		**60%**	**25%**	**16%**		**72%**	**13%**	**14%**
Brazil		39%	42%	19%		44%	33%	24%		52%	29%	19%								
Greater China		54%	31%	15%		56%	28%	16%		54%	32%	14%								
India		48%	41%	11%		51%	23%	25%		51%	41%	8%								
MIDDLE EAST		**46%**	**35%**	**20%**		**56%**	**32%**	**11%**		**58%**	**27%**	**15%**								

AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, HITACHI, PHILIPS, SIEMENS HEALTHINEERS, CANON MEDICAL SYSTEMS
NOTE* : MALTA INCLUDED IN ITALY

TABLE 2   COMPLIANCE WITH GOLDEN RULES (CT) / **EUROPE**

- AGED **1 - 5** YEARS
- AGED **6 - 10** YEARS
- AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE**
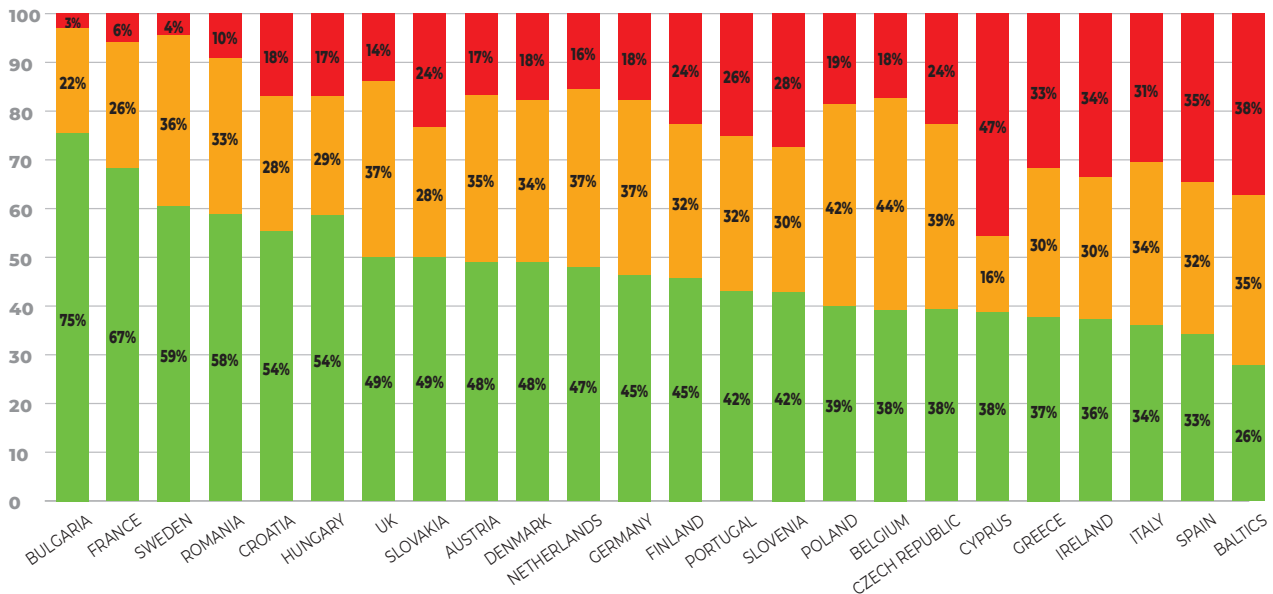
TABLE 3   COMPLIANCE WITH GOLDEN RULES EU (CT) / **EUROPE** VS. **BRIC, ME-CIS**

- AGED **1 - 5** YEARS
- AGED **6 - 10** YEARS
- AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE** VS. **BRIC, ME-CIS**
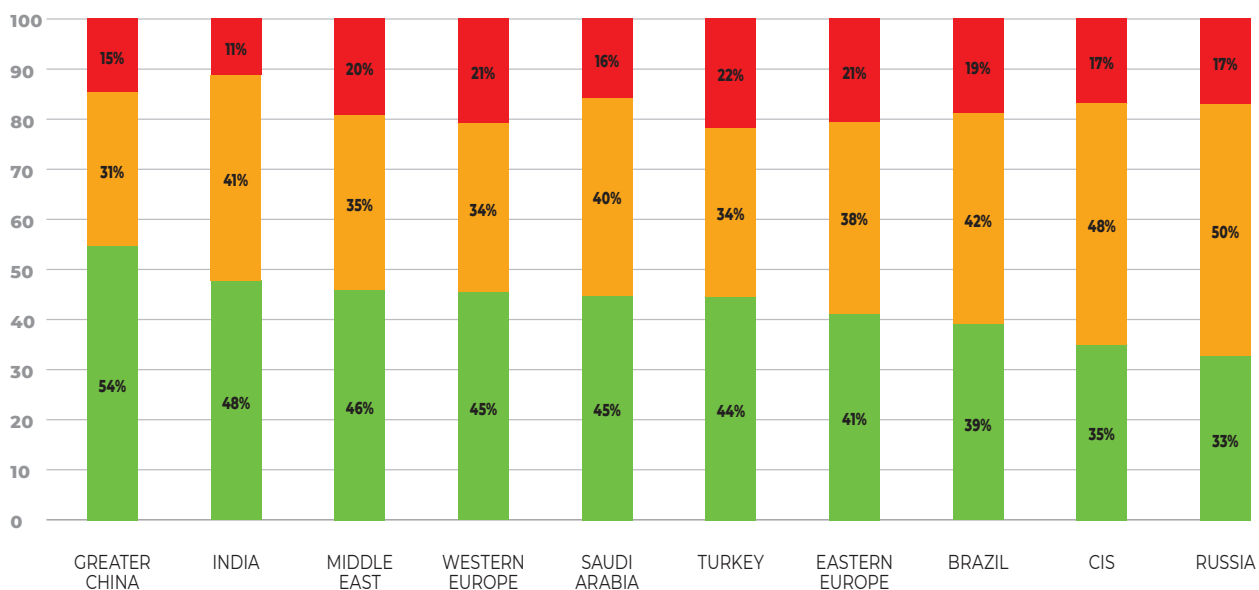
AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, HITACHI, PHILIPS, SIEMENS HEALTHINEERS, CANON MEDICAL SYSTEMS

TABLE 4   **UNITS AGED 10+ YEARS** (CT) **/ EASTERN EUROPE**

EASTERN EUROPE

BULGARIA 0,6%
MACEDONIA 1,1%
BOSNIA 2,1%
SLOVENIA 2,3%
ALBANIA 2,5%
CROATIA 2,6%
HUNGARY 4,2%
ROMANIA 6,2%
SLOVAKIA 6,2%
SERBIA 6,6%
CZECH REPUBLIC 9,8%
UKRAINE 12,5%
BALTICS 13,8%
POLAND 29,5%

TABLE 5   **UNITS AGED 10+ YEARS** (CT) **/ WESTERN EUROPE**

WESTERN EUROPE

FINLAND 1,2%
CYPRUS 0,6%
SWEDEN 0,5%
DENMARK 1,4%
IRELAND 1,5%
NORWAY 1,6%
SWITZERLAND 1,6%
NETHERLANDS 1,8%
BELGIUM 2,2%
AUSTRIA 2,3%
FRANCE 3,7%
PORTUGAL 4,3%
GREECE 5,5%
UK 5,9%
SPAIN 16,5%
GERMANY 21,0%
ITALY 28,2%

TABLE 6 **EQUIPMENT DENSITY TRENDS** UNITS / MILLION INHABITANTS (CT) **/ EUROPE**

DENSITY / **EUROPE**
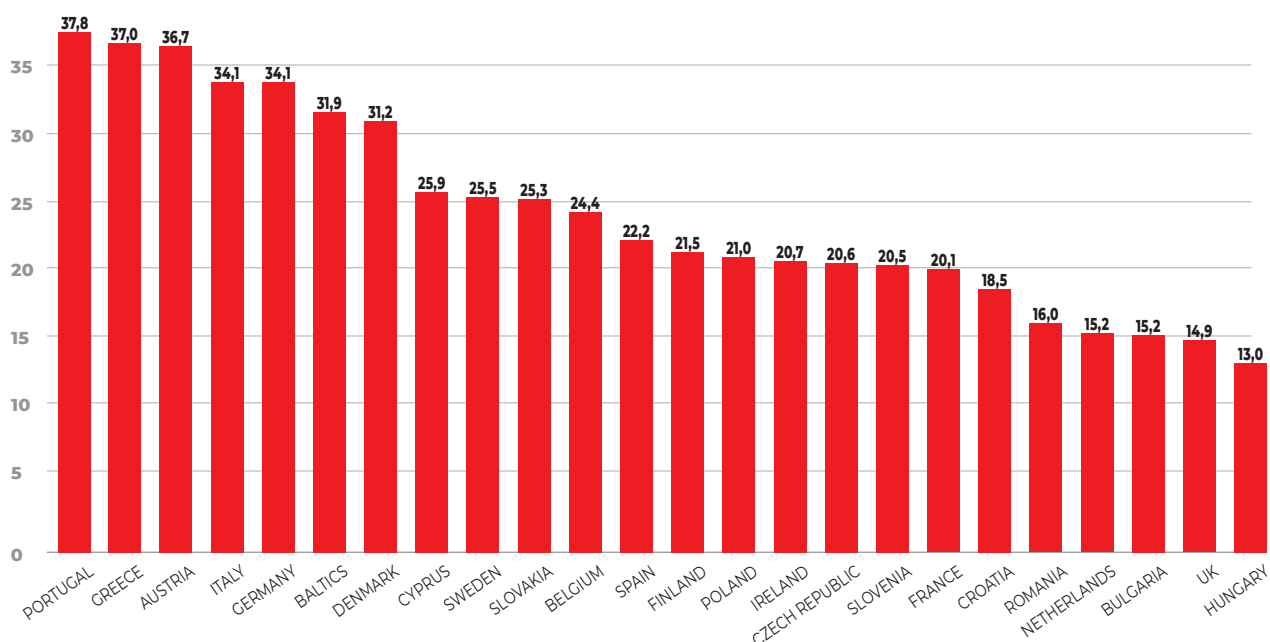
TABLE 7 **EQUIPMENT DENSITY TRENDS** UNITS / MILLION INHABITANTS (CT) **/ EUROPE** VS. **BRIC, ME-CIS**

DENSITY / **EUROPE** VS. **BRIC, ME-CIS**

MAGNETIC RESONANCE IMAGING (MRI)

■ (red) DOES NOT AT ALL MEET GOLDEN RULES
■ (orange) CLOSE BUT NOT MATCHING GOLDEN RULES
■ (green) EQUAL OR BETTER THAN GOLDEN RULES

TABLE 8   COMPLIANCE WITH GOLDEN RULES (MRI)

	END 2018				END 2015				END 2013				END 2011				END 2008			
	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS
Albania		17%	67%	17%		56%	33%	11%		50%	40%	10%								
BALTICS		**53%**	**24%**	**24%**		**38%**	**58%**	**4%**		**32%**	**64%**	**4%**		**77%**	**21%**	**2%**		**84%**	**8%**	**8%**
Bosnia		13%	63%	25%		35%	55%	10%		45%	35%	20%								
Bulgaria		64%	29%	7%		71%	24%	5%		81%	9%	11%		56%	12%	32%				
Croatia		28%	43%	30%		30%	55%	15%		53%	28%	19%								
Czech Republic		41%	42%	17%		46%	40%	14%		47%	45%	8%		76%	20%	4%		60%	33%	7%
Hungary		68%	19%	12%		62%	22%	16%		31%	37%	33%		39%	44%	17%		50%	50%	0%
Macedonia		22%	56%	22%		62%	23%	15%		54%	0%	46%								
Poland		47%	43%	10%		60%	30%	10%		73%	22%	4%		78%	16%	6%		60%	27%	13%
Romania		62%	30%	8%		61%	33%	6%		66%	27%	7%		75%	16%	9%				
Serbia		35%	30%	35%		43%	43%	14%		33%	56%	11%								
Slovakia		65%	21%	13%		41%	27%	32%		43%	48%	10%		65%	35%	0%		77%	16%	6%
Slovenia		47%	28%	25%		20%	48%	32%		38%	46%	15%		56%	22%	22%		75%		
Ukraine		33%	28%	39%		48%	37%	15%		30%	56%	14%		66%	28%	6%				
EASTERN EUROPE		**48%**	**36%**	**16%**		**54%**	**34%**	**12%**		**56%**	**33%**	**11%**		**72%**	**20%**	**8%**		**67%**	**25%**	**8%**
Portugal		43%	29%	28%		37%	39%	24%		41%	32%	27%		54%	29%	18%		53%	34%	12%
Spain		32%	24%	44%		26%	42%	32%		29%	41%	30%		43%	36%	20%		52%	33%	15%
IBERIA		**34%**	**25%**	**42%**		**27%**	**42%**	**31%**		**31%**	**40%**	**30%**		**45%**	**35%**	**20%**		**52%**	**33%**	**14%**
Denmark		59%	22%	19%		48%	38%	14%		49%	36%	15%		41%	43%	16%		65%	30%	6%
Finland		53%	35%	11%		53%	36%	11%		50%	45%	6%		62%	25%	13%		55%	23%	23%
Norway		53%	26%	21%		49%	28%	23%		39%	36%	25%		46%	40%	13%		53%	45%	2%
Sweden		65%	28%	6%		62%	27%	11%		58%	32%	11%		63%	25%	12%		60%	29%	11%
SCANDINAVIA		**58%**	**28%**	**14%**		**53%**	**32%**	**15%**		**50%**	**36%**	**14%**		**53%**	**33%**	**14%**		**59%**	**32%**	**10%**
Ireland		39%	28%	33%		40%	38%	22%		36%	49%	15%		52%	37%	11%				
UK		50%	30%	20%		47%	40%	13%		45%	41%	14%		52%	37%	11%				
UK & IRELAND		**49%**	**30%**	**21%**		**46%**	**40%**	**14%**		**45%**	**42%**	**14%**		**52%**	**37%**	**11%**		**63%**	**25%**	**12%**
Austria		59%	29%	12%		49%	36%	14%		36%	38%	27%						55%	35%	11%
Belgium		74%	16%	9%		52%	29%	19%		37%	45%	18%						64%	34%	2%
France		82%	16%	1%		79%	17%	4%		74%	23%	3%		73%	23%	3%		70%	26%	3%
Germany		48%	29%	22%		42%	36%	22%		44%	31%	25%		53%	31%	16%		47%	37%	16%
Greece		35%	30%	36%		27%	55%	18%		37%	39%	24%		56%	29%	15%		61%	32%	7%
Italy		41%	29%	29%		35%	37%	28%		40%	37%	23%		42%	38%	20%		50%	34%	16%
Netherlands		50%	38%	13%		49%	35%	16%		49%	33%	18%		46%	33%	21%		49%	28%	23%
Switzerland		62%	32%	7%		68%	26%	6%		51%	32%	17%		58%	27%	14%		61%	32%	7%
WESTERN EUROPE		**51%**	**28%**	**22%**		**46%**	**34%**	**19%**		**45%**	**34%**	**20%**		**52%**	**33%**	**15%**		**55%**	**33%**	**13%**
EUROPE		**51%**	**29%**	**21%**		**47%**	**34%**	**18%**		**47%**	**34%**	**19%**						**55%**	**32%**	**13%**
CYPRUS		**55%**	**30%**	**15%**		**23%**	**62%**	**15%**		**50%**	**33%**	**17%**		**62%**	**15%**	**23%**		**60%**		
RUSSIA		**45%**	**41%**	**14%**		**65%**	**27%**	**8%**		**70%**	**22%**	**8%**		**71%**	**15%**	**15%**		**64%**	**25%**	**11%**
TURKEY		**45%**	**36%**	**20%**		**46%**	**43%**	**11%**		**58%**	**33%**	**9%**		**57%**	**27%**	**15%**		**72%**	**18%**	**10%**
Brazil		48%	35%	17%		54%	31%	16%		52%	30%	18%								
Greater China		61%	30%	10%		63%	26%	12%		65%	28%	8%								
India		54%	30%	16%		39%	26%	35%		64%	27%	9%								
MIDDLE EAST		**53%**	**32%**	**16%**		**59%**	**30%**	**12%**		**63%**	**23%**	**13%**								

AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, HITACHI, PHILIPS, SIEMENS HEALTHINEERS, CANON MEDICAL SYSTEMS
NOTE* : MALTA INCLUDED IN ITALY

TABLE 9   COMPLIANCE WITH GOLDEN RULES (MRI) **/ EUROPE**

AGED **1 - 5** YEARS
AGED **6 - 10** YEARS
AGED **10+** YEARS
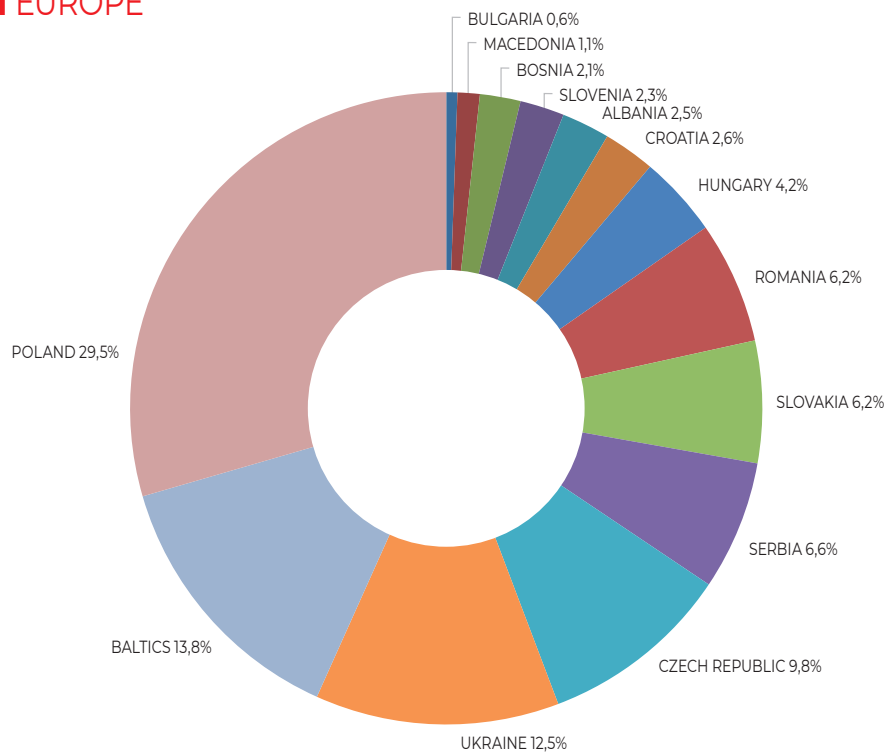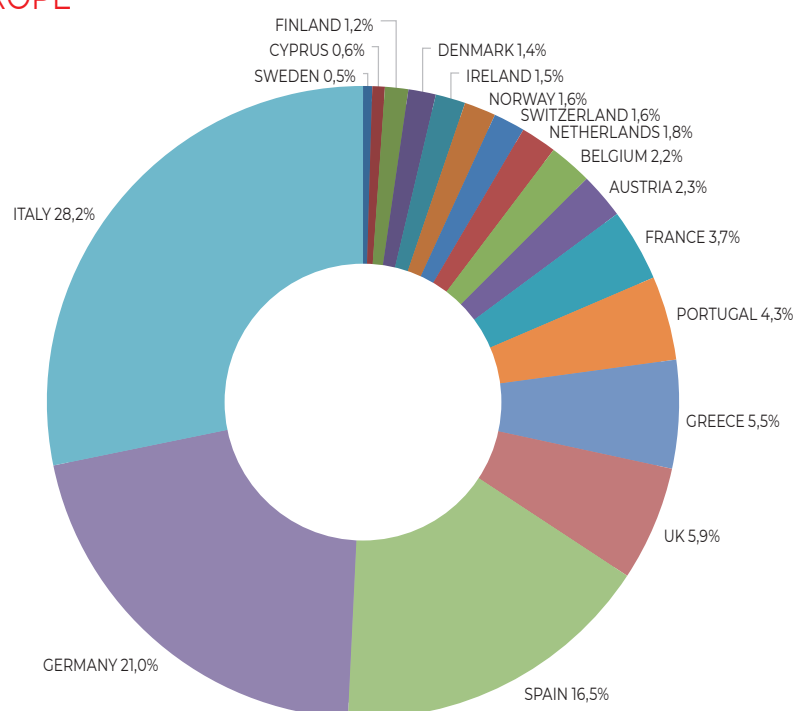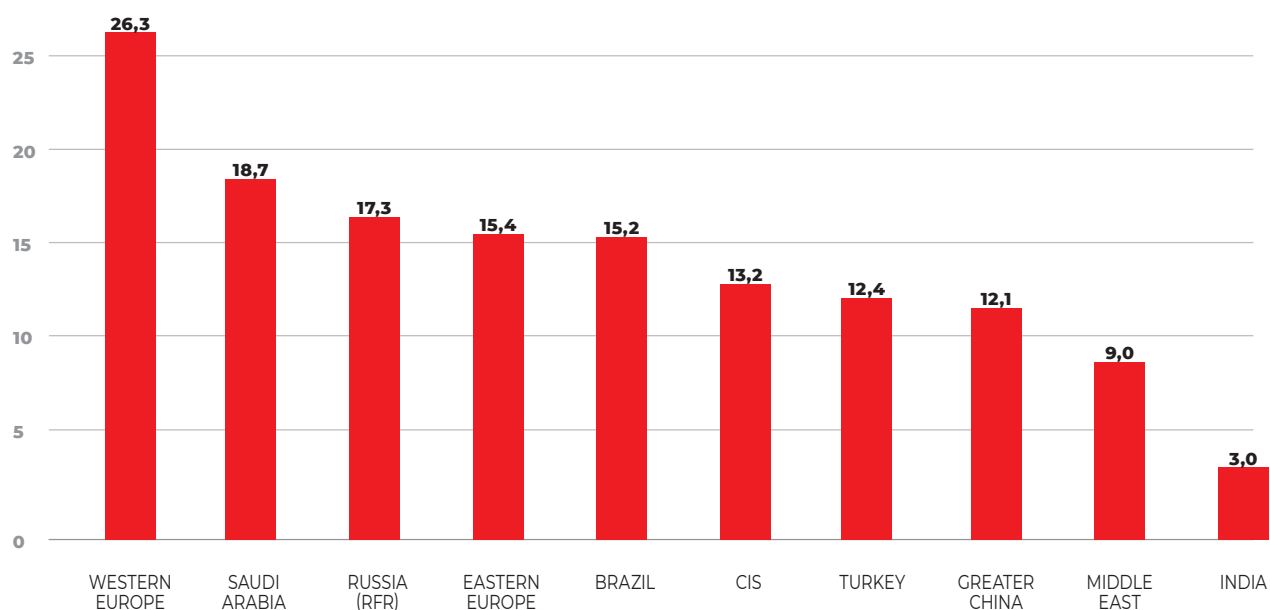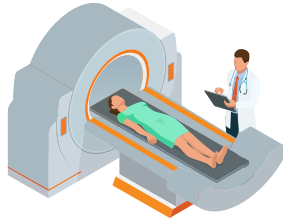
COMPLIANCE WITH GOLDEN RULES / **EUROPE**
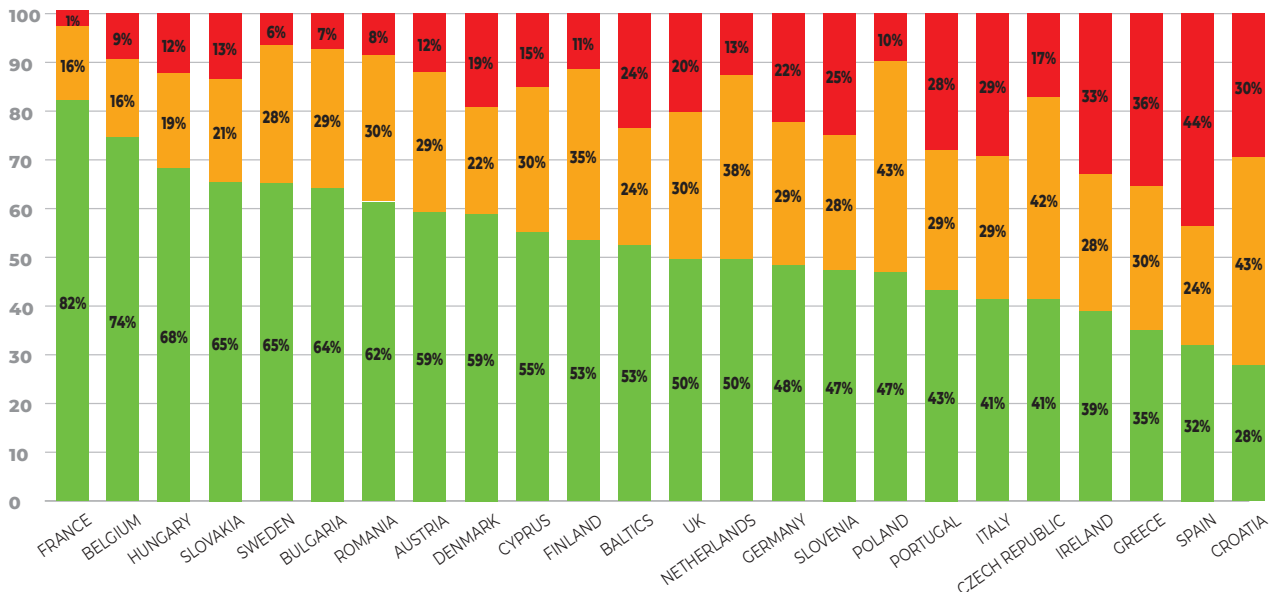
TABLE 10   COMPLIANCE WITH GOLDEN RULES EU (MRI) **/ EUROPE** VS. **BRIC, ME-CIS**

AGED **1 - 5** YEARS
AGED **6 - 10** YEARS
AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE** VS. **BRIC, ME-CIS**
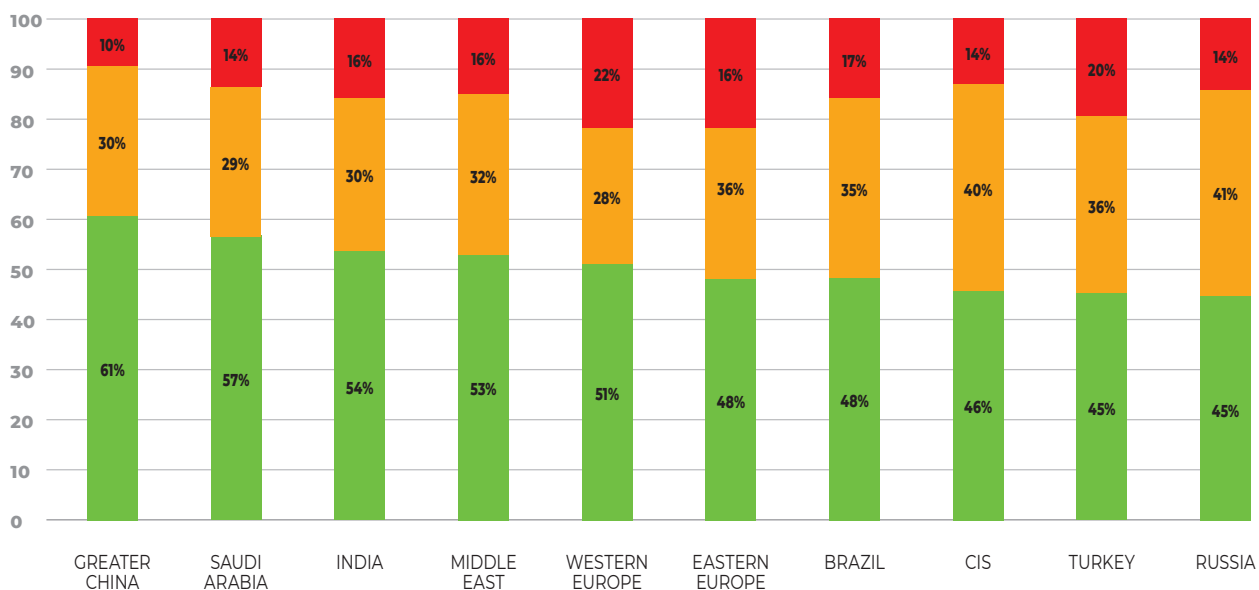
AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, HITACHI, PHILIPS, SIEMENS HEALTHINEERS, CANON MEDICAL SYSTEMS

TABLE 11   UNITS AGED 10+ YEARS (MRI) / **EASTERN EUROPE**

EASTERN EUROPE

ALBANIA 1,0%
BULGARIA 1,0%
MACEDONIA 1,0%
BOSNIA 2,1%
HUNGARY 3,7%
SLOVAKIA 3,7%
SLOVENIA 4,7%
CROATIA 7,3%
ROMANIA 7,9%
SERBIA 7,9%
CZECH REPUBLIC 9,9%
BALTICS 11,5%
UKRAINE 14,7%
POLAND 23,6%
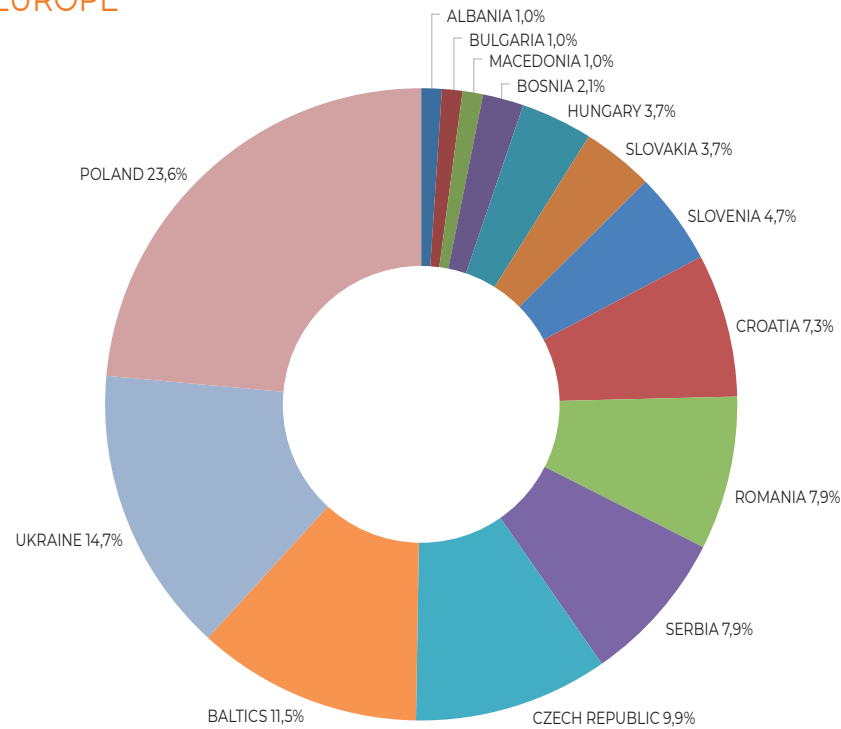
TABLE 12   UNITS AGED 10+ YEARS (MRI) / **WESTERN EUROPE**

WESTERN EUROPE

FRANCE 0,7%
BELGIUM 0,7%
SWEDEN 0,6%
CYPRUS 0,2%
FINLAND 0,8%
SWITZERLAND 1,3%
IRELAND 1,5%
AUSTRIA 1,5%
DENMARK 1,6%
NETHERLANDS 1,6%
NORWAY 1,7%
PORTUGAL 2,4%
GREECE 4,5%
UK 10,3%
ITALY 18,9%
SPAIN 20,9%
GERMANY 31,0%

UNITS AGED 10+ YEARS

27
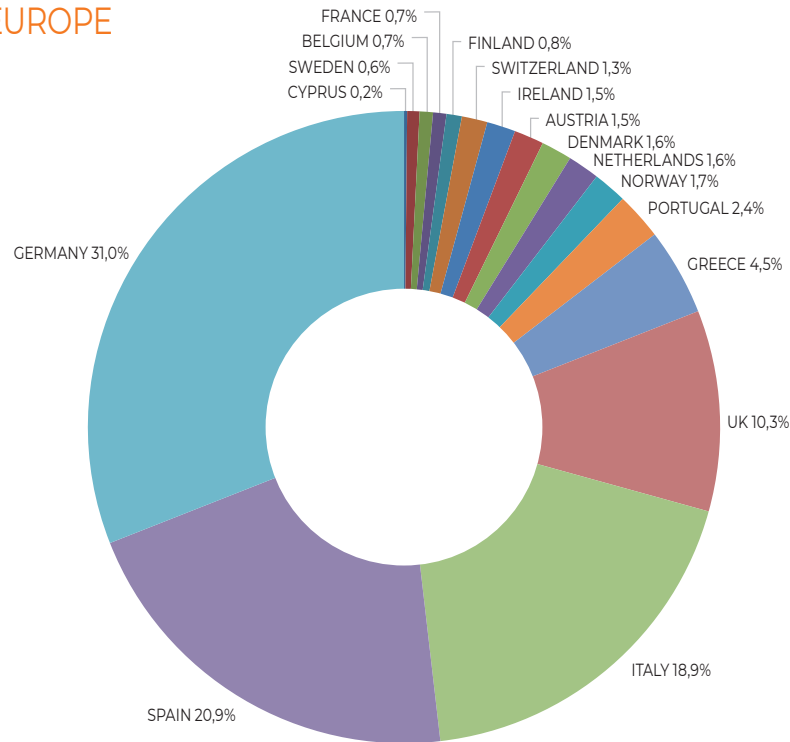
TABLE 13 **EQUIPMENT DENSITY TRENDS** UNITS / MILLION INHABITANTS (MRI) / **EUROPE**

DENSITY / **EUROPE**

Country	Density
GERMANY	33,1
AUSTRIA	27,6
DENMARK	26,9
FINLAND	24,0
GREECE	22,2
ITALY	19,8
SWEDEN	18,6
SPAIN	18,3
SLOVENIA	17,1
IRELAND	16,8
CYPRUS	16,2
PORTUGAL	15,8
BALTICS	15,6
UK	14,9
NETHERLANDS	14,3
FRANCE	14,1
BELGIUM	12,2
POLAND	12,0
CROATIA	11,0
CZECH REPUBLIC	10,5
SLOVAKIA	9,5
ROMANIA	8,5
HUNGARY	5,8
BULGARIA	4,0
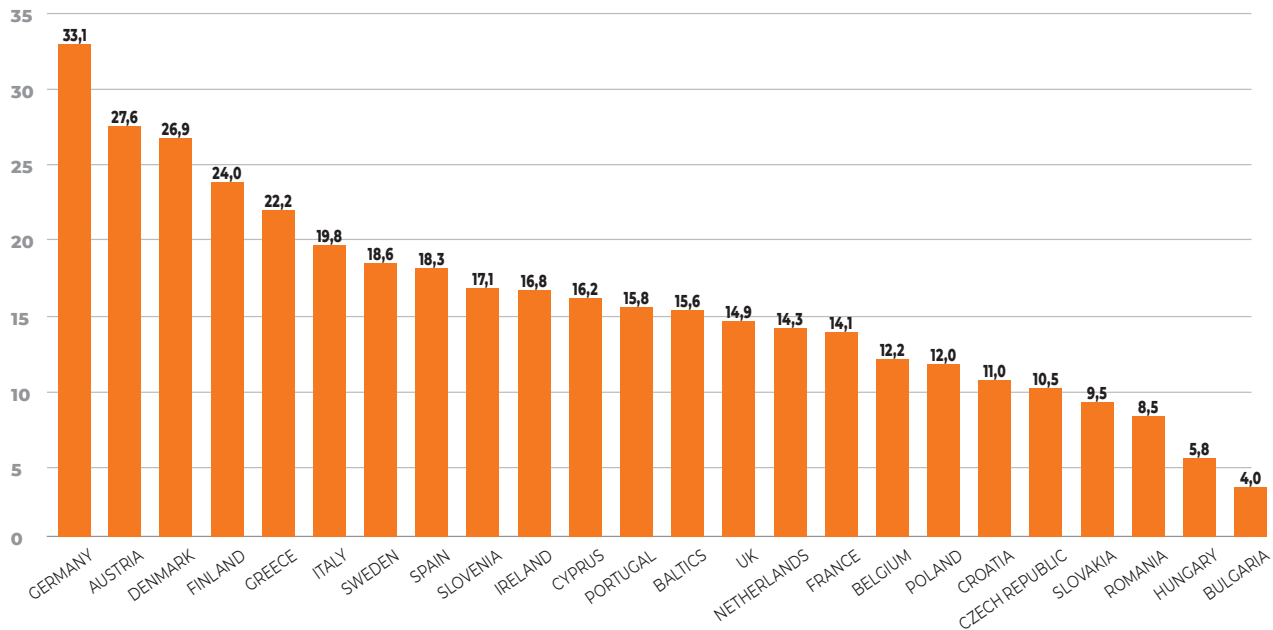
TABLE 14 **EQUIPMENT DENSITY TRENDS** UNITS / MILLION INHABITANTS (MRI) / **EUROPE** VS. **BRIC, ME-CIS**

DENSITY / **EUROPE** VS. **BRIC, ME-CIS**

Region	Density
WESTERN EUROPE	20,9
BRAZIL	15,5
TURKEY	11,9
SAUDI ARABIA	11,7
RUSSIA (RFR)	7,6
EASTERN EUROPE	7,4
CIS	5,9
MIDDLE EAST	5,8
GREATER CHINA	4,9
INDIA	1,4
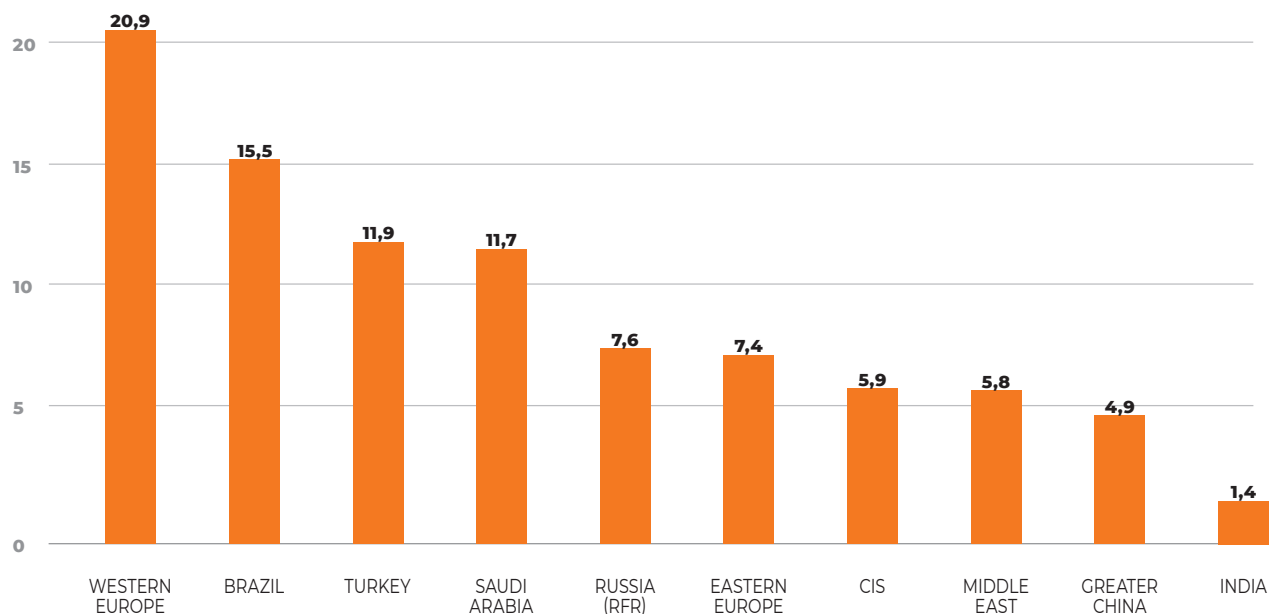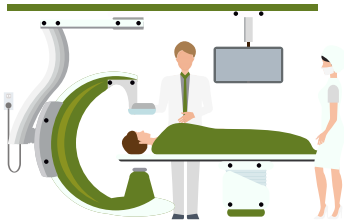
X-RAY ANGIOGRAPHY / INTERVENTIONAL

■ DOES NOT AT ALL MEET GOLDEN RULES
■ CLOSE BUT NOT MATCHING GOLDEN RULES
■ EQUAL OR BETTER THAN GOLDEN RULES

TABLE 15   COMPLIANCE WITH GOLDEN RULES (X-RAY ANGIOGRAPHY)

	END **2018** COCIR GOLDEN RULES ANALYSIS				END **2015** COCIR GOLDEN RULES ANALYSIS				END **2013** COCIR GOLDEN RULES ANALYSIS				END **2011** COCIR GOLDEN RULES ANALYSIS				END **2008** COCIR GOLDEN RULES ANALYSIS			
	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS
Albania		21%	50%	29%		88%	13%	0%		54%	31%	15%								
BALTICS		**34%**	**38%**	**28%**		**33%**	**50%**	**17%**		**37%**	**47%**	**16%**		**45%**	**39%**	**16%**		**60%**	**27%**	**13%**
Bosnia		53%	20%	27%		46%	38%	15%		27%	36%	36%								
Bulgaria		77%	21%	2%		59%	32%	10%		63%	31%	6%		50%	23%	27%				
Croatia		64%	18%	18%		73%	19%	8%		45%	25%	30%								
Czech Republic		36%	45%	19%		57%	28%	15%		49%	30%	22%		53%	27%	20%		37%	33%	31%
Hungary		54%	24%	22%		66%	14%	21%		31%	49%	20%		28%	41%	31%		51%	27%	22%
Macedonia		86%	0%	14%		82%	12%	6%		59%	18%	23%								
Poland		47%	37%	16%		54%	28%	18%		48%	39%	13%		58%	31%	12%		64%	25%	11%
Romania		61%	29%	10%		75%	25%	0%		63%	31%	6%		75%	19%	6%		55%	21%	24%
Serbia		39%	33%	28%		29%	71%	0%		29%	56%	15%								
Slovakia		42%	24%	33%		33%	58%	8%		24%	35%	41%		43%	27%	30%				
Slovenia		33%	41%	26%		22%	67%	11%		32%	29%	39%		33%	56%	11%				
Ukraine		24%	54%	22%		65%	28%	7%		46%	46%	9%		75%	18%	7%		71%		
EASTERN EUROPE		**47%**	**35%**	**18%**		**58%**	**28%**	**14%**		**45%**	**37%**	**17%**		**55%**	**30%**	**16%**		**54%**	**27%**	**19%**
Portugal		42%	23%	35%		38%	28%	35%		29%	37%	34%		41%	22%	37%		41%	26%	33%
Spain		37%	31%	32%		34%	39%	27%		33%	37%	29%		45%	26%	29%		51%	29%	19%
IBERIA		**37%**	**30%**	**32%**		**35%**	**37%**	**28%**		**33%**	**37%**	**30%**		**44%**	**25%**	**30%**		**50%**	**29%**	**21%**
Denmark		32%	47%	21%		35%	48%	17%		31%	60%	9%		63%	21%	16%				
Finland		55%	36%	10%		52%	41%	7%		48%	45%	7%		59%	30%	11%				
Norway		43%	37%	19%		40%	45%	14%		42%	35%	23%		46%	27%	28%		56%	21%	23%
Sweden		52%	32%	15%		53%	36%	11%		45%	35%	20%		47%	30%	23%		44%	36%	20%
SCANDINAVIA		**47%**	**37%**	**16%**		**46%**	**41%**	**13%**		**41%**	**44%**	**15%**		**52%**	**27%**	**21%**		**49%**	**31%**	**20%**
Ireland		42%	32%	26%		56%	36%	8%		32%	36%	31%		36%	45%	19%		59%	29%	13%
UK		41%	37%	22%		52%	43%	5%		41%	40%	19%		44%	34%	22%		56%	28%	16%
UK & IRELAND		**41%**	**37%**	**23%**		**52%**	**42%**	**6%**		**40%**	**40%**	**20%**		**43%**	**35%**	**22%**		**56%**	**28%**	**15%**
Austria		60%	28%	13%		52%	38%	11%		34%	42%	24%		51%	23%	26%		47%	27%	27%
Belgium		55%	30%	15%		48%	28%	23%		40%	30%	30%		41%	27%	32%		42%	35%	23%
France		50%	35%	15%		51%	34%	15%		47%	35%	18%		50%	27%	23%		43%	29%	28%
Germany		46%	37%	17%		54%	33%	14%		47%	30%	22%		52%	26%	21%		48%	26%	26%
Greece		34%	23%	43%		45%	33%	23%		23%	39%	39%		39%	30%	30%		37%	39%	25%
Italy		30%	33%	37%		30%	34%	35%		40%	36%	25%		44%	29%	28%		43%	35%	22%
Netherlands		44%	37%	19%		48%	35%	16%		44%	38%	18%		60%	18%	22%		52%	22%	26%
Switzerland		49%	36%	15%		49%	38%	13%		40%	40%	20%		46%	33%	21%		53%	26%	21%
WESTERN EUROPE		**44%**	**35%**	**21%**		**47%**	**36%**	**17%**		**42%**	**36%**	**22%**		**49%**	**28%**	**24%**		**48%**	**29%**	**23%**
EUROPE		**44%**	**35%**	**21%**		**49%**	**34%**	**17%**		**43%**	**36%**	**21%**								
CYPRUS		**38%**	**31%**	**31%**		**63%**	**13%**	**25%**		**38%**	**25%**	**38%**		**49%**	**28%**	**23%**				
RUSSIA		**38%**	**43%**	**20%**		**60%**	**27%**	**13%**		**69%**	**20%**	**11%**		**38%**	**25%**	**38%**		**56%**	**29%**	**15%**
TURKEY		**44%**	**40%**	**15%**		**43%**	**43%**	**14%**		**44%**	**45%**	**12%**		**64%**	**18%**	**17%**		**63%**	**17%**	**21%**
Brazil		38%	36%	27%		51%	24%	25%		57%	24%	19%								
Greater China		62%	28%	10%		65%	25%	10%		61%	29%	10%								
India		64%	29%	8%		34%	20%	46%		62%	31%	8%								
MIDDLE EAST		**47%**	**40%**	**14%**		**64%**	**24%**	**12%**		**51%**	**34%**	**16%**								

AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, PHILIPS, SIEMENS HEALTHINEERS, CANON MEDICAL SYSTEMS
NOTE* : MALTA INCLUDED IN ITALY

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TABLE 16 COMPLIANCE WITH GOLDEN RULES (X-RAY) **/ EUROPE**

AGED **1 - 5** YEARS
AGED **6 - 10** YEARS
AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE**
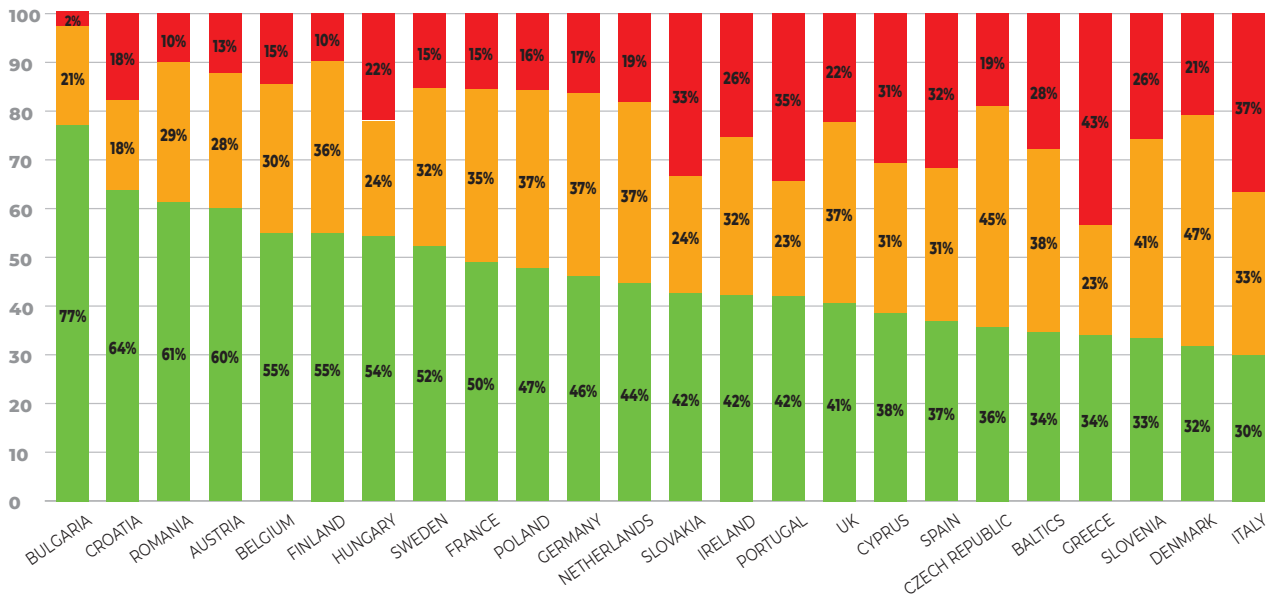
TABLE 17 COMPLIANCE WITH GOLDEN RULES EU (X-RAY) **/ EUROPE** VS. **BRIC, ME-CIS**

AGED **1 - 5** YEARS
AGED **6 - 10** YEARS
AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE** VS. **BRIC, ME-CIS**
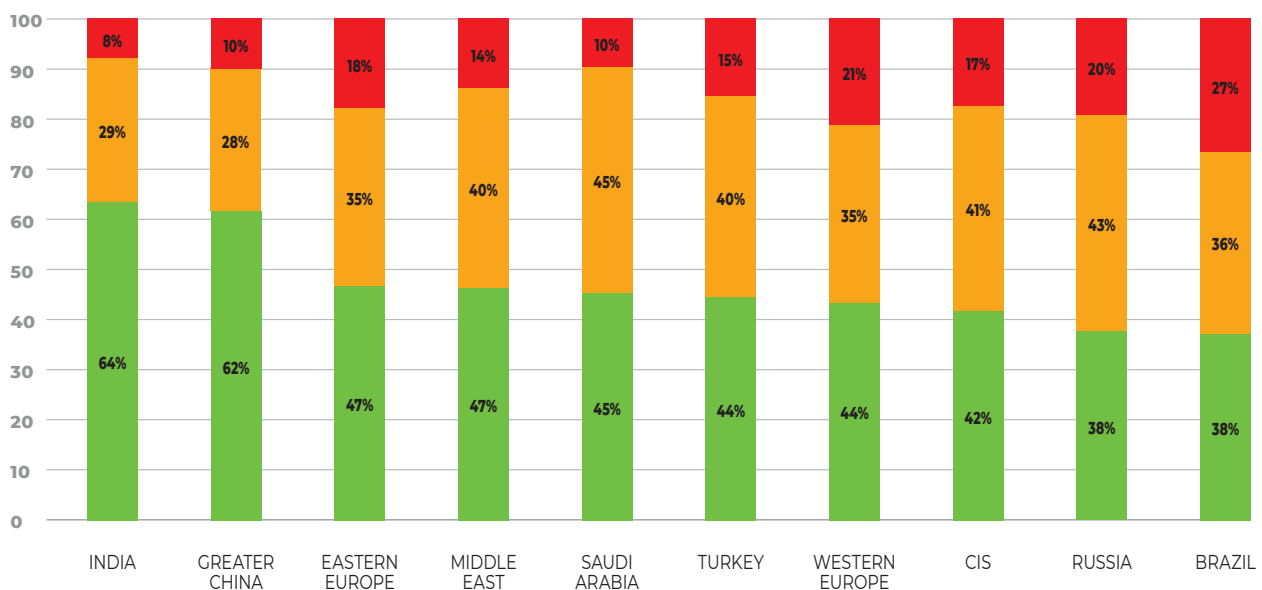
AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, PHILIPS, SIEMENS HEALTHINEERS, CANON MEDICAL SYSTEMS

TABLE 18   UNITS AGED 10+ YEARS (X-RAY) **/ EASTERN EUROPE**

EASTERN EUROPE

ALBANIA 1,9%
MACEDONIA 0,5%
BULGARIA 0,5%
BOSNIA 1,9%
CROATIA 2,9%
SLOVENIA 3,4%
SLOVAKIA 5,3%
ROMANIA 5,8%
UKRAINE 6,3%
HUNGARY 7,2%
SERBIA 7,2%
BALTICS 7,7%
CZECH REPUBLIC 15,5%
POLAND 33,8%
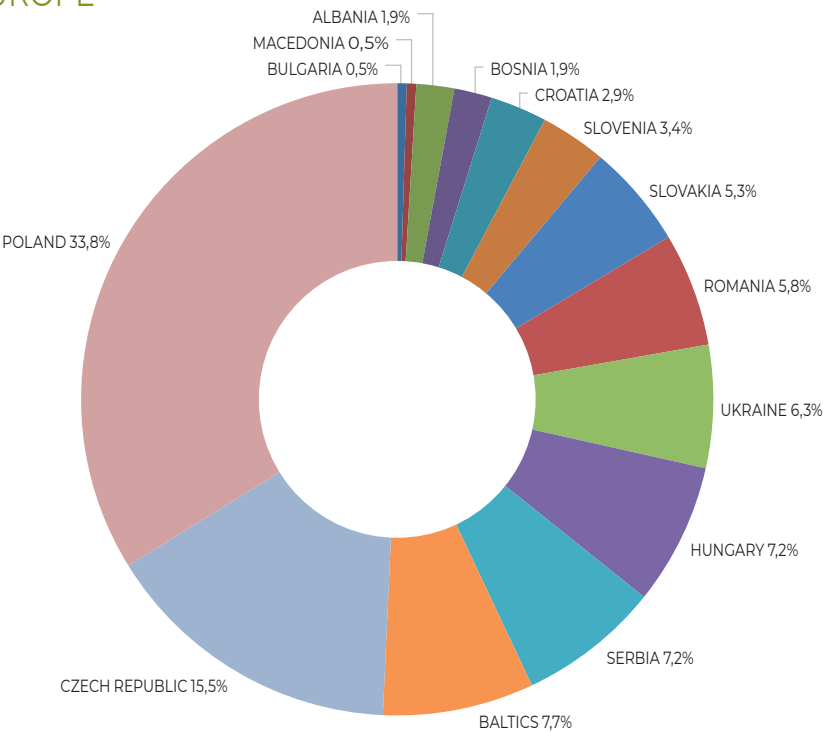
TABLE 19   UNITS AGED 10+ YEARS (X-RAY) **/ WESTERN EUROPE**

WESTERN EUROPE

IRELAND 1,4%
FINLAND 0,8%
CYPRUS 0,3%
AUSTRIA 1,6%
NORWAY 1,6%
DENMARK 1,7%
PORTUGAL 1,8%
SWITZERLAND 2,1%
SWEDEN 2,4%
BELGIUM 2,5%
GREECE 2,9%
NETHERLANDS 4,5%
FRANCE 7,5%
SPAIN 11,8%
UK 13,5%
ITALY 18,6%
GERMANY 25,1%

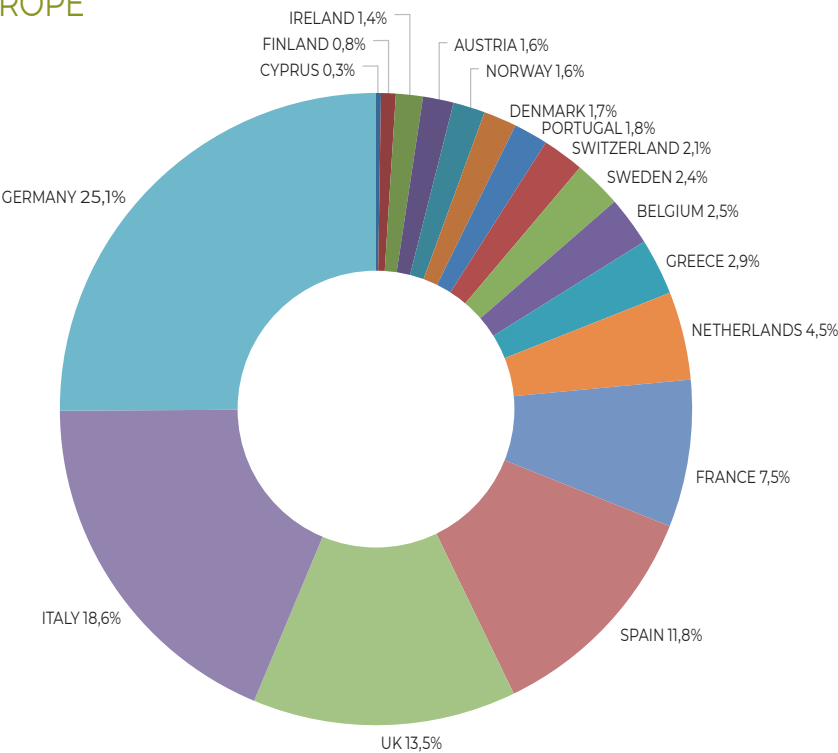**TABLE 20   EQUIPMENT DENSITY TRENDS** UNITS / MILLION INHABITANTS (X-RAY) **/ EUROPE**
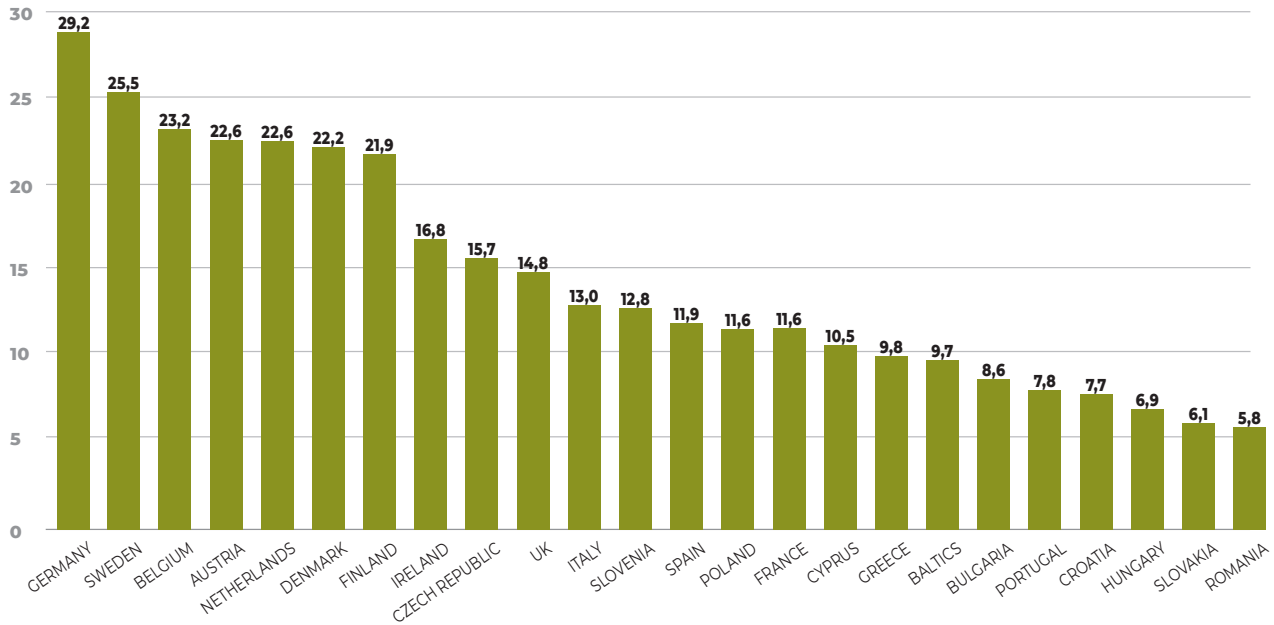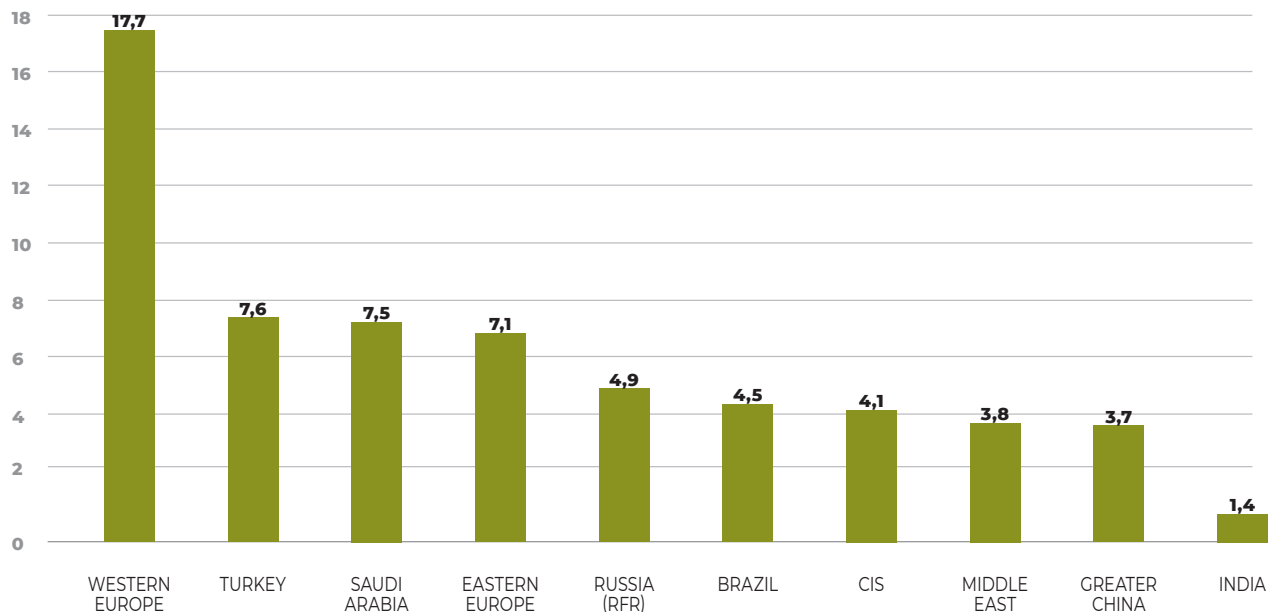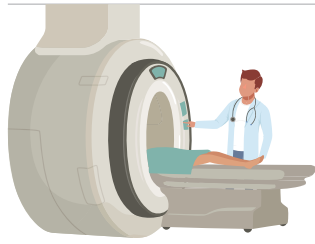
DENSITY / **EUROPE**

TABLE 21   EQUIPMENT DENSITY TRENDS UNITS / MILLION INHABITANTS (X-RAY) **/ EUROPE** VS. **BRIC, ME-CIS**

DENSITY / **EUROPE** VS. **BRIC, ME-CIS**

MOLECULAR IMAGING PET (MI PET)

TABLE 22 COMPLIANCE WITH GOLDEN RULES (MI PET)

Legend:
- 🟥 DOES NOT AT ALL MEET GOLDEN RULES
- 🟧 CLOSE BUT NOT MATCHING GOLDEN RULES
- 🟩 EQUAL OR BETTER THAN GOLDEN RULES

	END 2018				END 2015				END 2013				END 2011				END 2008			
	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS	RATING	AGED 1-5 YEARS	AGED 6-10 YEARS	AGED 10+ YEARS
Albania		0%	0%	100%		0%	0%	100%		0%	0%	100%								
BALTICS		**33%**	**50%**	**17%**		**100%**	**0%**	**0%**		**100%**	**0%**	**0%**		**50%**	**50%**	**0%**				
Bosnia		50%	50%	0%		100%	0%	0%		100%	0%	0%								
Bulgaria		83%	17%	0%		75%	25%	0%		100%	0%	0%		33%	33%	33%				
Croatia		0%	60%	40%		40%	60%	0%		60%	40%	0%								
Czech Republic		76%	14%	10%		56%	22%	22%		40%	40%	20%		46%	41%	14%				
Hungary		67%	17%	17%		50%	38%	13%		20%	80%	0%		75%	25%	0%		100%	0%	0%
Macedonia		100%	0%	0%		N/A	N/A	N/A		0%	0%	0%								
Poland		44%	46%	10%		58%	42%	0%		79%	21%	0%		56%	32%	12%		100%	0%	0%
Romania		50%	38%	13%		88%	13%	0%		86%	14%	0%		60%	32%	8%				
Serbia		0%	100%	0%		N/A	N/A	N/A		50%	50%	0%								
Slovakia		43%	43%	14%		67%	0%	33%		57%	29%	14%		50%	33%	17%				
Slovenia		33%	67%	0%		50%	50%	0%		67%	33%	0%		50%	33%	17%				
Ukraine		0%	100%	0%		0%	100%	0%		33%	67%	0%		100%	0%	0%				
EASTERN EUROPE		**48%**	**40%**	**12%**		**60%**	**33%**	**7%**		**64%**	**31%**	**6%**		**54%**	**34%**	**12%**		**86%**	**14%**	**0%**
Portugal		65%	20%	15%		13%	63%	25%		45%	36%	18%		55%	36%	9%				
Spain		31%	34%	35%		42%	46%	12%		44%	35%	21%		55%	31%	15%				
IBERIA		**36%**	**32%**	**32%**		**39%**	**48%**	**13%**		**44%**	**35%**	**20%**		**55%**	**31%**	**14%**		**73%**	**24%**	**3%**
Denmark		48%	39%	14%		49%	51%	0%		55%	39%	6%		75%	13%	13%				
Finland		44%	33%	22%		50%	38%	13%		62%	38%	0%		78%	22%	0%				
Norway		69%	31%	0%		38%	50%	13%		57%	43%	0%		83%	17%	0%				
Sweden		78%	19%	4%		46%	46%	8%		29%	50%	21%		56%	13%	31%		75%		
SCANDINAVIA		**58%**	**31%**	**11%**		**47%**	**48%**	**5%**		**51%**	**42%**	**7%**		**71%**	**14%**	**14%**		**82%**		
Ireland		13%	33%	53%		13%	75%	13%		25%	75%	0%		22%	78%	0%		89%		
UK		59%	25%	16%		47%	48%	5%		49%	45%	5%		68%	29%	3%		91%		
UK & IRELAND		**53%**	**26%**	**21%**		**43%**	**51%**	**6%**		**47%**	**48%**	**5%**		**62%**	**35%**	**3%**		**91%**	**8%**	**2%**
Austria		57%	32%	11%		58%	26%	16%		41%	41%	18%		72%	28%	0%		56%	31%	13%
Belgium		58%	31%	10%		33%	67%	0%		40%	33%	27%		47%	25%	28%				
France		60%	31%	8%		63%	30%	7%		66%	30%	4%		50%	32%	18%				
Germany		34%	47%	18%		33%	55%	12%		50%	32%	18%		67%	19%	14%		59%	20%	21%
Greece		50%	30%	20%		60%	40%	0%		50%	50%	0%		43%	38%	20%				
Italy		34%	36%	30%		44%	46%	10%		49%	45%	6%		45%	52%	3%		76%	24%	0%
Netherlands		59%	30%	11%		54%	40%	6%		43%	47%	10%		63%	35%	3%				
Switzerland		59%	36%	5%		69%	31%	0%		56%	44%	0%		78%	22%	0%				
WESTERN EUROPE		**47%**	**35%**	**19%**		**48%**	**44%**	**8%**		**51%**	**38%**	**11%**		**58%**	**31%**	**12%**		**73%**	**20%**	**7%**
EUROPE		**47%**	**35%**	**18%**		**49%**	**43%**	**8%**		**52%**	**38%**	**11%**		**57%**	**31%**	**12%**				
CYPRUS		**0%**	**0%**	**0%**		**0%**	**0%**	**0%**		**0%**	**0%**	**0%**		**0%**	**0%**	**0%**				
RUSSIA		**48%**	**50%**	**3%**		**87%**	**13%**	**0%**		**71%**	**12%**	**17%**		**82%**	**18%**	**0%**		**36%**		
TURKEY		**44%**	**37%**	**20%**		**54%**	**41%**	**5%**		**48%**	**51%**	**0**		**61%**	**36%**	**2%**		**89%**	**11%**	**0%**
Brazil		44%	49%	6%		74%	16%	10%		68%	28%	4%								
Greater China		50%	33%	17%		55%	34%	11%		55%	37%	8%								
India		68%	26%	7%		47%	22%	31%		80%	20%	0%								
MIDDLE EAST		**66%**	**24%**	**10%**		**79%**	**19%**	**2%**		**67%**	**33%**	**0%**								

AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, PHILIPS, SIEMENS HEALTHINEERS
NOTE* : MALTA INCLUDED IN ITALY

TABLE 23   COMPLIANCE WITH GOLDEN RULES (MI-PET) **/ EUROPE**

AGED **1 - 5** YEARS
AGED **6 - 10** YEARS
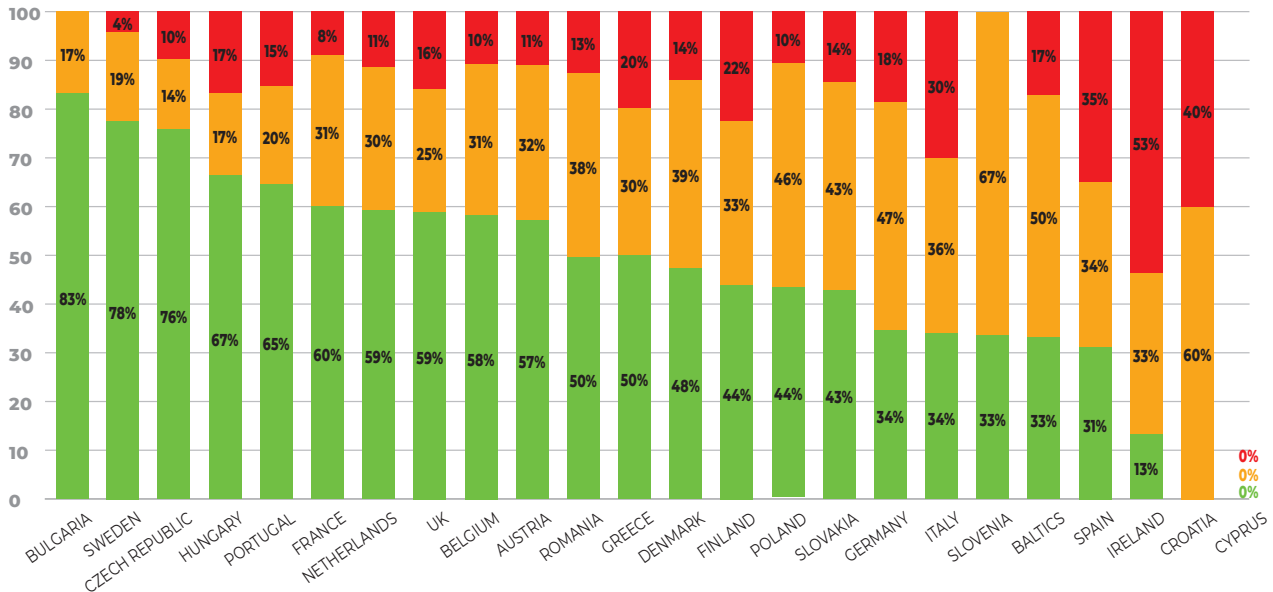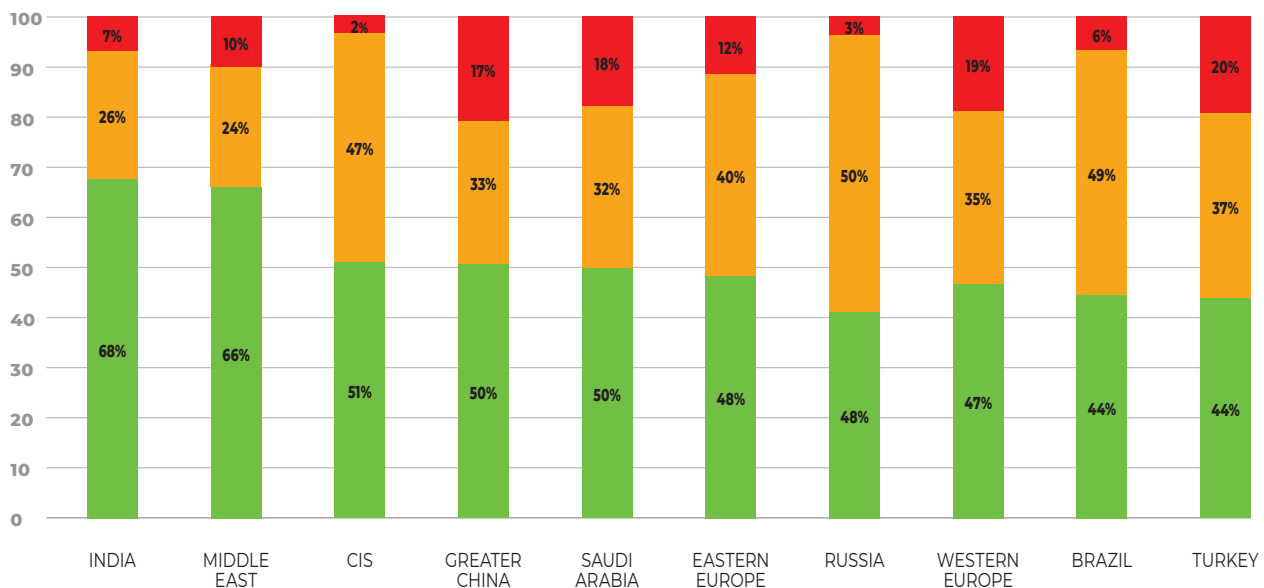AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE**

TABLE 24   COMPLIANCE WITH GOLDEN RULES EU (MI-PET) **/ EUROPE** VS. **BRIC, ME-CIS**

AGED **1 - 5** YEARS
AGED **6 - 10** YEARS
AGED **10+** YEARS

COMPLIANCE WITH GOLDEN RULES / **EUROPE** VS. **BRIC, ME-CIS**

AGE PROFILE - INSTALLED BASE ANALYSIS - PARTICIPANTS : GE, PHILIPS, SIEMENS HEALTHINEERS

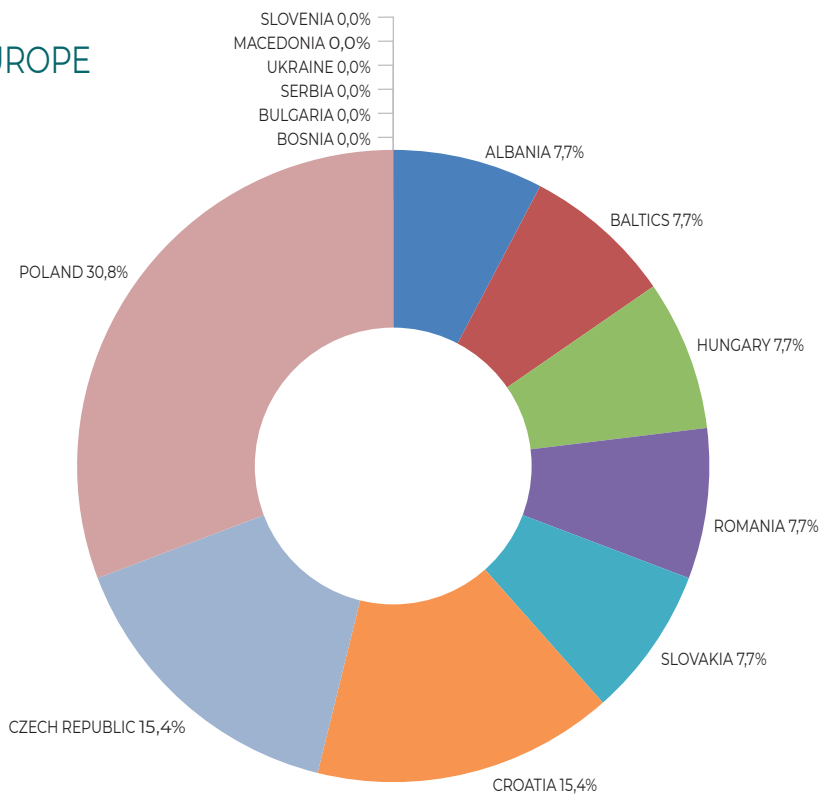**TABLE 25 UNITS AGED 10+ YEARS** (MI-PET) **/ EASTERN EUROPE**

EASTERN EUROPE

SLOVENIA 0,0%
MACEDONIA 0,0%
UKRAINE 0,0%
SERBIA 0,0%
BULGARIA 0,0%
BOSNIA 0,0%

POLAND 30,8%

ALBANIA 7,7%

BALTICS 7,7%

HUNGARY 7,7%

ROMANIA 7,7%

SLOVAKIA 7,7%

CZECH REPUBLIC 15,4%

CROATIA 15,4%

TABLE 26 UNITS AGED 10+ YEARS (MI-PET) **/ WESTERN EUROPE**

WESTERN EUROPE

GREECE 1,0%
SWEDEN 0,5%
CYPRUS 0,0%
NORWAY 0,0%

SWITZERLAND 1,0%
PORTUGAL 1,4%
AUSTRIA 1,4%
FINLAND 1,9%
BELGIUM 2,4%
DENMARK 2,9%
NETHERLANDS 3,4%
IRELAND 3,9%
FRANCE 6,8%
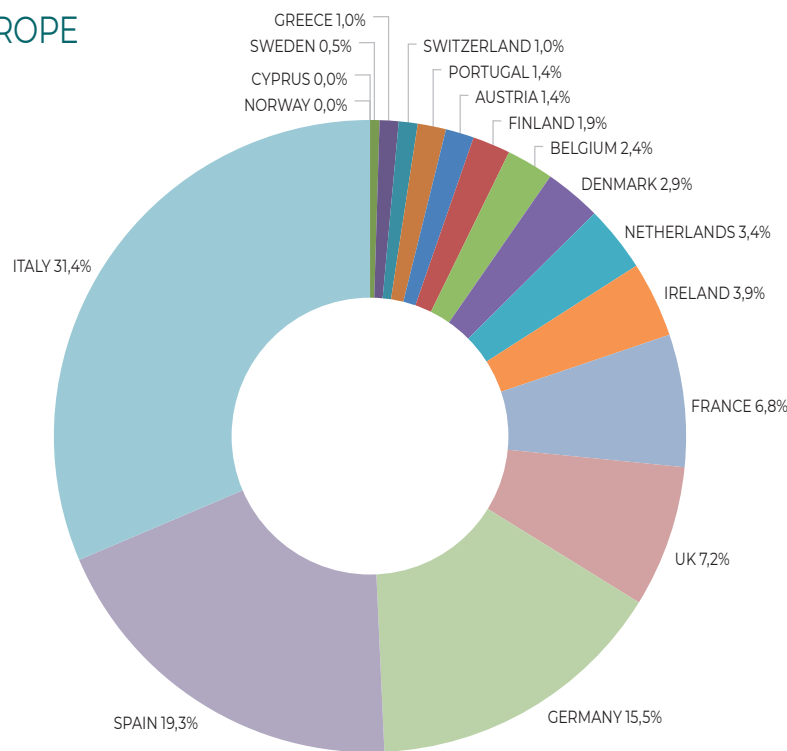UK 7,2%
GERMANY 15,5%

ITALY 31,4%

SPAIN 19,3%

TABLE 27   EQUIPMENT DENSITY TRENDS UNITS / MILLION INHABITANTS (MI PET) **/ EUROPE**
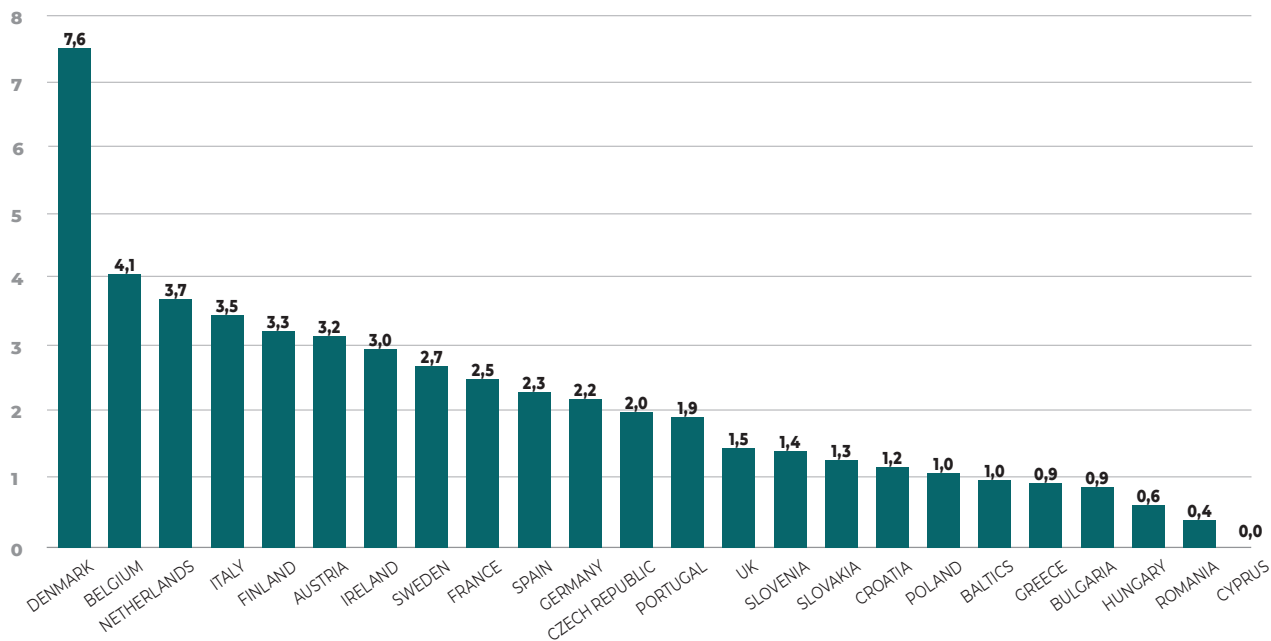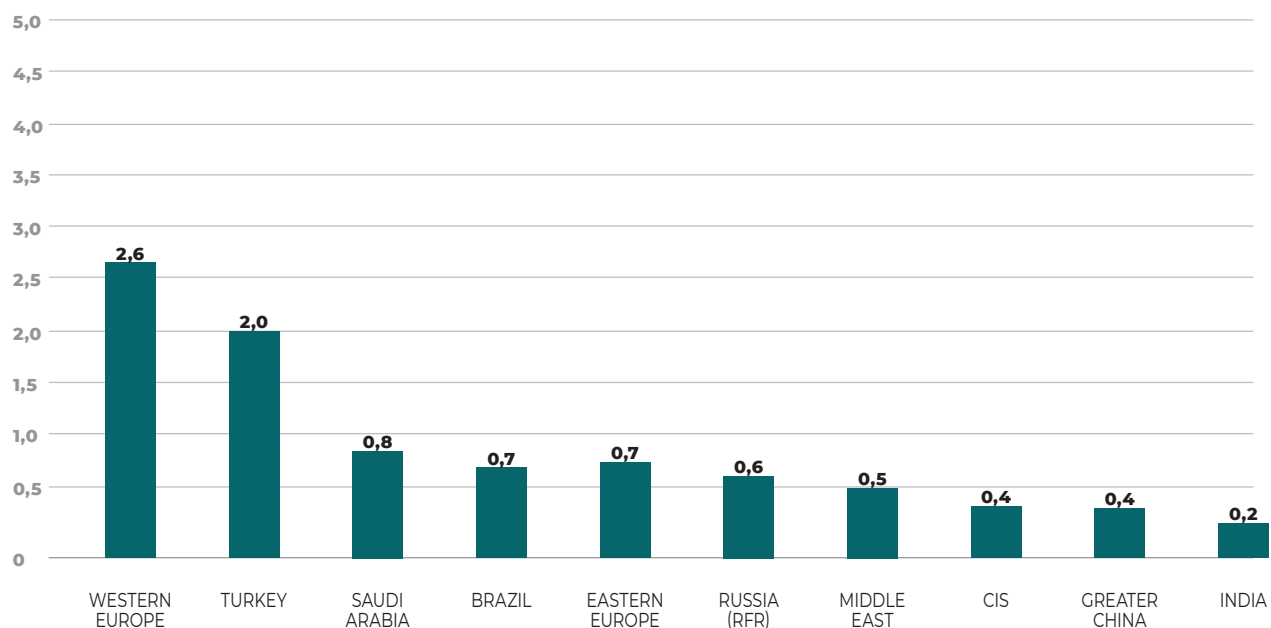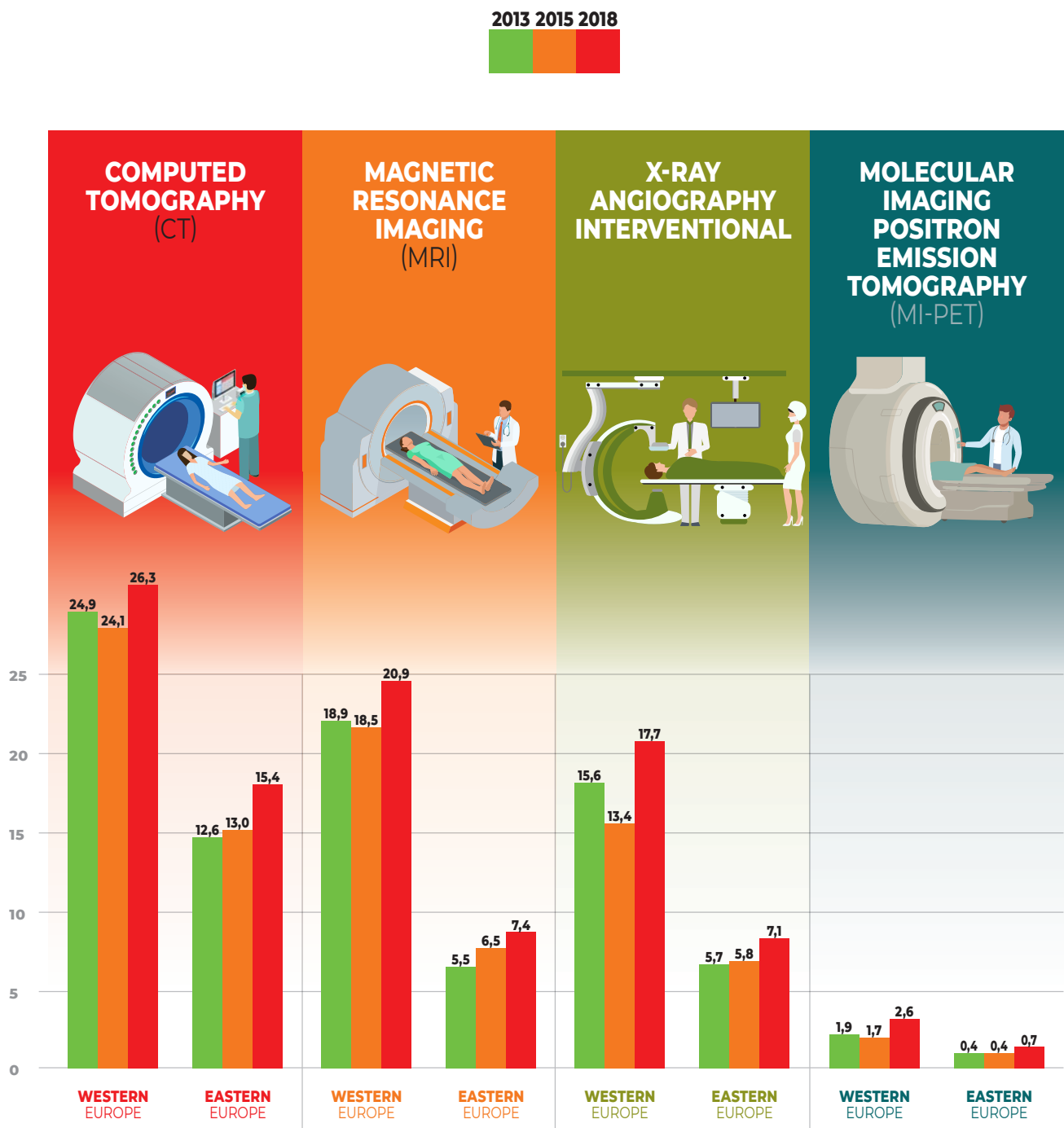
DENSITY / **EUROPE**

TABLE 28   EQUIPMENT DENSITY TRENDS UNITS / MILLION INHABITANTS (MI PET) **/ EUROPE** VS. **BRIC, ME-CIS**

DENSITY / **EUROPE** VS. **BRIC, ME-CIS**

EQUIPMENT DENSITY TRENDS

TABLE 29   EQUIPMENT DENSITY TRENDS IN WESTERN AND EASTERN EUROPE UNITS / MILLION INHABITANTS

2013 2015 2018

	COMPUTED TOMOGRAPHY (CT)		MAGNETIC RESONANCE IMAGING (MRI)		X-RAY ANGIOGRAPHY INTERVENTIONAL		MOLECULAR IMAGING POSITRON EMISSION TOMOGRAPHY (MI-PET)	
	WESTERN EUROPE	EASTERN EUROPE	WESTERN EUROPE	EASTERN EUROPE	WESTERN EUROPE	EASTERN EUROPE	WESTERN EUROPE	EASTERN EUROPE
2013	24,9	12,6	18,9	5,5	15,6	5,7	1,9	0,4
2015	24,1	13,0	18,5	6,5	13,4	5,8	1,7	0,4
2018	26,3	15,4	20,9	7,4	17,7	7,1	2,6	0,7

ANNEX 2:
MEDICAL IMAGING TECHNOLOGIES

COMPUTED TOMOGRAPHY (CT)

Also commonly referred to as a CT scan, Computed Tomography is an imaging technique that combines multiple X-ray images taken from different angles, producing detailed cross-sectional internal images. The first CT scanner for medical use dates from 1972.

The resulting images provide doctors with much greater information than standard X-rays, allowing them to examine individual 'slices' within the 3-D images. Contrast agents are commonly used in combination with CT scans to perform angiographies and other specific tissue examinations.

CT SCANS ARE OFTEN USED TO EVALUATE:

- Organs in the pelvis, chest and abdomen;
- Colon health (CT colongraphy);
- Presence of tumours;
- Pulmonary embolism (CT angiography);
- Abdominal aortic aneurysms (CT angiography);
- Spinal injuries;
- Cardiac health.

Technological improvements in CT, such as **dose modulation acquisition techniques** and **iterative reconstruction** and **Artificial Intelligence algorithms**, have dramatically reduced the X-ray dose required, improved hospital efficiency and clinical effectiveness and reduced costs.

MAGNETIC RESONANCE IMAGING (MRI)

Magnetic Resonance Imaging (MRI) is a technology that uses radio waves and a magnetic field to provide detailed images of organs and tissues. The first magnetic resonance image was taken in 1973 and the first MRI scanner for medical imaging was developed in 1977.

The type of radiation in this kind of imaging technique generates images of the soft tissues, rather than the skeleton. This capacity has proven highly effective in diagnosing a number of conditions, by showing the difference between normal and diseased tissues. MRI is often used to evaluate:

- Blood vessels
- Breasts
- Major organs

X-RAY

X-rays are the oldest and most commonly-used medical imaging technique. X-rays were discovered in 1895 and first used to visualise human tissue in 1896. X-rays use ionising radiation to send beams through the body, producing images of a person's internal structure. These are absorbed at different rates, depending on the density of the tissue.

X-ray radiation can generate three kinds of medical image; conventional X-ray imaging, angiography and fluoroscopy.

Conventional X-ray imaging generates an image of a localised part of the body, which will be analysed for anatomical abnormalities. This kind of imaging usually evaluates:

- The skeletal system;
- The oral cavity (bone and teeth);
- Any ingested objects;
- The lungs;
- The breast (mammography);
- The digestive system.

Angiography uses X-rays in combination with a contrast agent (chemical substances used to enhance specific structures in images) to visualise blood vessels, particularly the coronary arteries.

Fluoroscopy uses X-rays to visualise the internal structure in real-time, providing moving images of the interior of an body, such as hearts beating or throats while swallowing.

MOLECULAR IMAGING-PET (MI-PET)

Molecular imaging is a diagnostic tool where metabolic processes can be visualised by administering small amounts of radioactive pharmaceuticals to patients. These accumulate in a specific part of the body in a controlled fashion.

Unlike other ionising radiation techniques, which can only generate anatomical images, this technique generates functional images. Some conditions initially have a physiological effect rather than an anatomical change in the body. Molecular imaging allows for an earlier diagnosis.

Combining molecular imaging with CT or MRI images can provide clinicians with superior images. AIPES[18] has developed a comprehensive tool on nuclear medicine. Click here[19] for further information.

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18 http://www.aipes-eeig.org/
19 http://www.whatisnuclearmedicine.com/Home

GENERAL INFORMATION ABOUT COCIR

COCIR is the European Trade Association representing the medical imaging, radiotherapy, health ICT and electromedical industries.

Founded in 1959, COCIR is a non-profit association headquartered in Brussels (Belgium) with a China Desk based in Beijing since 2007. COCIR is unique as it brings together the healthcare, IT and telecommunications industries.

Our focus is to open markets for COCIR members in Europe and beyond. We provide a range of services in the areas of regulatory, technical, market intelligence, environmental, standardisation, international and legal affairs.

COCIR is also a founding member of DITTA, the Global Diagnostic Imaging, Healthcare IT and Radiation Therapy Trade Association (*www.globalditta.org*).

COCIR COMPANY MEMBERS:

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Dentsply Sirona | Elekta | EOS imaging | Epic | esaote | FRESENIUS MEDICAL CARE
FUJIFILM | GE | HITACHI Inspire the Next | HOLOGIC The Science of Sure | iba | IBM
强生(中国)医疗器材有限公司 Johnson & Johnson Medical (China) Ltd. | KONICA MINOLTA | Medtronic 美敦力 Further.Together | nova motum SERVICES & CONSULTING | PHILIPS
SAMSUNG | SIEMENS Healthineers | varian | WeHealth by SERVIER | ZEISS

NATIONAL TRADE ASSOCIATIONS MEMBERS:

.AGORIA	snitem creating the tools for medical progress	bvitg	ZVEI:
BELGIUM	FRANCE	GERMANY	GERMANY
ETOSZ ASSOCIATION OF HEALTH TECHNOLOGY SUPPLIERS AND MEDICAL DEVICE MANUFACTURERS	CONFINDUSTRIA Dispositivi Medici	apormed Associação Portuguesa das Empresas de Dispositivos Médicos tecnologias para a saúde	FHI MEDICAL TECHNOLOGY
HUNGARY	ITALY	PORTUGAL	THE NETHERLANDS
FME POWERED BY DUTCH TECHNOLOGY	federación española de empresas de fenin TECNOLOGÍA SANITARIA	SWEDISH Medtech	TIP GÖR DER	AXREM
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